Dental

Abstracts

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Dental Abstracts

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3. To supply enough data in each abstract and digest that the reader may determine whether he wishes to refer to the original article for more complete information.

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Operative dentistry

Diagnosis of occlusal disharmonies

H. A. Zander and B. Hurzeler.
J.South.California D.A. 26:382-385 Nov. 1958

In the adult dentition, changes occur in the occlusion. These changes are accompanied by one or more phenomena, all of which alter the relation between the mandible and the maxilla. The alteration occurs because the proprioceptors in the periodontal membranes guide the mandible into an acquired relation with the maxilla so that the patient can get maximum contact between the upper and lower teeth. The proprioceptors in the periodontal membrane give stronger signals than those in the temporomandibular joints; therefore, it is possible that this acquired relation is not in harmony with the temporomandibular joint and the muscles of mastication.

A new method which enables the dentist to distinguish between an acquired jaw relation and the correct jaw relation utilizes a tool, the "Occlusolator," manufactured by the Rower Dental Manufacturing Co., Boston. Use of this tool or clutch temporarily removes the proprioceptive nerve impulses from the periodontal ligaments, these impulses being responsible for the acquired position.

The clutch is attached to the maxilla and the mandible. The maxillary part of the clutch consists of two movable arms (A, in illustration, left) which are fastened to the buccal aspect of the teeth and gingiva by means of self-curing acrylic resin (B) and a screw (C). A movable screw (D) with a lock nut (E) extends vertically through the maxillary and mandibular parts. The mandibular part (illustration, center) is identical to the maxillary part except that a plate is attached to the former with sticky wax. This plate, when blackened with a tracing pencil, allows a tracing for registration by the movable screw (D).

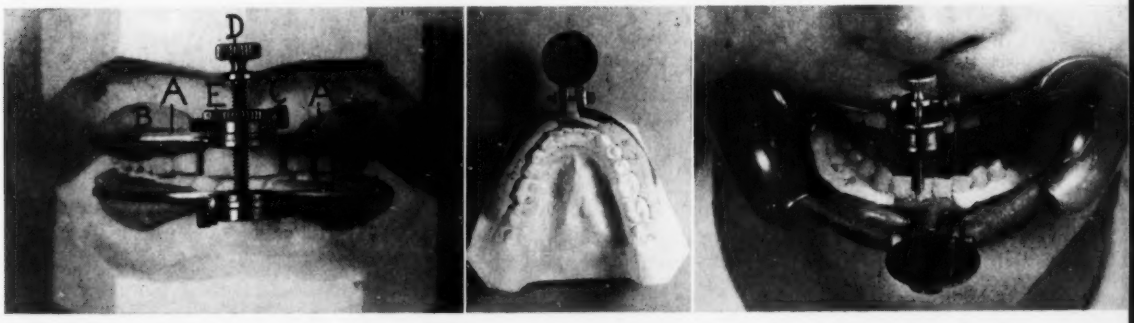
After the two parts of the clutch are fastened to the jaws, the screw (D) is advanced until it hits the plate when the teeth are in contact in the acquired mandibular position. The patient then is asked to open his mouth and the screw is advanced further. The amount of advancement is determined by the amount of overbite. The object of this second advancement is to make sure that during mandibular movement the screw can contact the plate but that there will be no tooth contact.

The patient is asked to slide the mandible—slowly and without any pressure—first forward and backward, and then right and left. If these movements are repeated several times, a Gothic arch tracing appears on the blackened plate (illustration, right). The center of this Gothic arch

Left: Assembled clutch on stone casts. A = clutch arms. B = self-curing acrylic resin. C = arm screw. D = tracer screw. E = lock nut

Center: Mandibular part of clutch in position. A tracing plate is attached with sticky wax and blackened with a tracing pencil

Right: Tracing screw is advanced and patient slides his mandible forward and backward, and right and left, to produce a Gothic arch tracing on blackened plate



tracing represents an unstrained retruded mandibular position from which lateral movements can be made.

After the tracing has been made, the pin is moved one turn back; if an interference is noted in either the right or left lateral position, it is removed by grinding. The pin then can be returned once more and the procedure repeated. However, this procedure cannot be repeated until all teeth come in contact, for two reasons:

1. Since the mandible opens on an arc, the tracing made at a given opening will not coincide with tracings made at different openings.
2. The cusps would be ground flat.

The clutch can be used for diagnosis of changes in the mandibular position, correction of such changes by grinding, prosthetic or restorative procedures, or orthodontic treatment.

Eastman Dental Dispensary, Rochester, N.Y.

Galvanic action between dental restorations

John H. Farrell. *Brit.D.J.* 104:128-129
Feb. 18, 1958

When metals are placed in the mouth in contact with saliva, simple electric cells are formed and electric currents flow. Such currents vary in amplitude from minute ones to considerable discharges which cause painful "galvanic shock." The cells normally are made up of two dissimilar metals and saliva. The two metals may be embodied in two separate fillings or may be different parts of a single restoration. The greatest galvanic effect is found between gold and amalgam, but two apparently similar amalgams vary enough in structure and composition to enable a cell to be formed.

When two dissimilar metals such as a gold inlay and an amalgam filling come into contact intermittently, the effect may be great enough to cause sharp pain. The small potential differences that exist between two restorations (even gold and amalgam) when they are not in contact do not give rise to large currents because of the resistance of the rest of the circuit. But if this is "shorted" by contact between the metals, as may result in biting, the result may be a current large enough to cause acute pain. The smaller currents often cause a metallic taste, tingling or burning sensations and discoloration of fillings.

An apparatus was designed to demonstrate the existence of these currents and to show their comparative amplitude. Among the dental metals tested were 22 carat inlay gold, platinized gold, white gold, stainless steel, chrome-cobalt alloy, silver amalgam and copper amalgam. The electrical contacts were made inside the teeth, the wires being led out of the base of the models through watertight seals. Each wire was soldered to a socket on the control panel. The electrolyte was normal saline. A Pye "Scalamp" galvanometer was used.

Although the apparatus was designed for ease of demonstration and not for accurate measurement, the results obtained agree closely with those given in the literature. The average reading between 22 carat inlay gold and silver amalgam was 560 mv. The smallest reading (10 mv.) was obtained from the two silver amalgams. Specimen readings intermediate between these two extremes were 90 mv. between 22 carat inlay gold and stainless steel, and 310 mv. between copper amalgam and silver amalgam.

Sutherland Dental School, University of Durham, Newcastle upon Tyne, 1, England

The measurement of heat produced in teeth using a Pallador thermocouple

Edgar Gordon. *Brit.D.J.* 105:290-291
Oct. 21, 1958

The Pallador thermocouple, developed in 1957, consists of a wire of 40 per cent palladium-gold coupled with a wire of 10 per cent iridium-platinum. It is reliable and accurate up to 350°C. and can be operated continuously in this range.

The heat-producing effect of four rotary dental instruments was evaluated with the aid of a Pallador thermocouple on teeth in vivo. Lower first molars with either Class I or Class II cavities were used. The tooth was isolated with a rubber dam, and a no. ½ round bur was driven into the buccal fissure to a depth of 4 mm. The depth was determined with a measured smooth broach. A welded bead was then inserted into the cavity into which the bead was held by a tight fit. Bi-

cycle valve tubing was used to insulate the thermocouple wires leading out of the mouth. An initial reading corresponding to body temperature was taken.

The four instruments evaluated were a no. 1 tapered fissure diamond, no. 559 fissure tungsten carbide, no. 3 steel fissure bur and a rubber wheel (used only on a Class II cavity).

An engine speed of 6,000 rpm was used, with the driving belt set to a linear pull of three pounds. The cutting instrument was applied for three seconds and then taken off for three seconds. At each change the millivoltmeter was read. Each instrument was used twice and the average reading converted to centigrade degrees, and time-temperature graphs were prepared.

The intermittent three second cutting cycle did not prevent a steady accumulation of heat in the tooth. Conversely, it took some time for the tooth to cool.

The rubber wheel produced the most heat in the least amount of time. The stainless steel bur took some time to commence heat production, after which the heat rose sharply; this probably was caused by the rapid blunting of the bur. The tungsten carbide instrument produced less heat than the diamond instrument.

6 Harcourt House, 19A, Cavendish Square, London W.1, England

Tarnish of certain dental alloys

Marjorie L. Swartz, Ralph W. Phillips and Mohamed Daoud El Tannir. *J.D.Res.* 37:837-847 Sept.-Oct. 1958

Resistance to tarnish and corrosion in mouth fluids always has been considered an important requirement of a good restorative material. An investigation was undertaken to determine the chemical nature of tarnish produced in vivo and to study the effect of certain variables on in vitro tarnish. The restorative materials studied were two representative commercial amalgam alloys (one containing zinc and the other a nonzinc alloy), an experimental gallium alloy, and two gold alloys (one high and one low carat). Disks of each alloy were suspended in various mediums including various concentrations of sulfides, chlorides, oxides, and air, distilled water and synthetic saliva.

Roentgen-ray diffraction patterns of clinically tarnished amalgam restorations indicated sulfide to be a dominant factor in the tarnish of amalgam alloys. Amalgam specimens exhibited gross discoloration in sulfide solutions. Lesser degrees of tarnish were noted in those amalgam specimens stored in chlorides, synthetic saliva and water.

The degree and rate of tarnish of the amalgam specimens did not appear to be influenced either by the residual mercury content or by the presence or absence of zinc.

Concentration of the medium appeared to influence the severity of tarnish; amalgam specimens immersed in the 0.005 per cent and 0.05 per cent solutions of sulfide exhibited less discoloration than those exposed to either the 0.5 per cent or 5.0 per cent solutions.

Sulfur produced little tarnish on the gallium alloy, although heavy tarnish was incurred on the gallium alloy by storage in sodium chloride, hydrogen peroxide and distilled water. With gallium alloy, oxides or chlorides apparently are the principal constituents of tarnish.

A light tarnish of a low carat gold alloy was induced by sulfides. This alloy was not affected by other elements. High carat gold was not influenced by storage in any of the mediums used.

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Extractions

Postoperative complications in extraction of malposed teeth

Th. Kirsch. *Zahnärztl.Welt & Reform*
59:205-210 April 25, 1958

Unerupted, impacted and malposed teeth occur less frequently in the lower jaw than in the upper jaw. Extraction of malposed lower teeth, however, often causes postoperative complications.

The value and the significance of roentgenograms for the extraction of malposed teeth, especially of lower third molars, cannot be overemphasized. Visualization and interpretation provide the basis for treatment planning and decrease the hazard of postoperative complication. The same holds true for localization of foreign bodies within the maxillofacial region.

During extraction of malposed teeth, it sometimes happens that teeth are aspirated, swallowed or gain access to maxillary sinuses or even cysts through perforated lacunae. A typical complication in extraction of lower molars is the penetration of the tooth into the floor of the mouth.

Other complications are: (1) the so-called "dry socket"; (2) osteomyelitis; (3) sequestration; (4) jaw fracture; (5) oroantral fistula; (6) trauma caused by instrumentation; (7) lesion of nerves, and (8) hemorrhage.

Damage to the maxillary sinus caused by a dislodged, malposed tooth, and thrusting such a tooth into an oroantral fistula, are both unusual postoperative complications. Two case reports dealing with such complications may, therefore, be of interest.

Case 1. The patient, a 55 year old woman, had a partially impacted, malposed, left upper third molar extracted which caused some difficulties. The tooth slipped from the forceps and could not be found. The dentist assumed that it was aspirated or swallowed by the patient. Because there was the possibility that it had entered the maxillary sinus, the patient was referred to the Dental Clinic of the University of Heidelberg, Germany.

Figure 1 Anterior view of the maxillary sinus. The malposed tooth appears near the zygomatic bone. Contrast shadows show tamponades in the empty alveolus

Figure 2 Lateral view of the maxillary sinus. The malposed tooth is partially concealed by the zygomatic bone, seemingly located in the infratemporal region. Tamponades appear as gray shadows

Figure 3 Drawing reveals the probable site and the course of dislocation of the tooth

Figure 4 Oroantral fistula near the zygomatic process in which a displaced tooth is embedded. Roentgenogram does not permit an exact diagnosis of the tooth's location

Figure 5 Roentgenogram of the temporomandibular joint furnishes adequate information on the location of the tooth

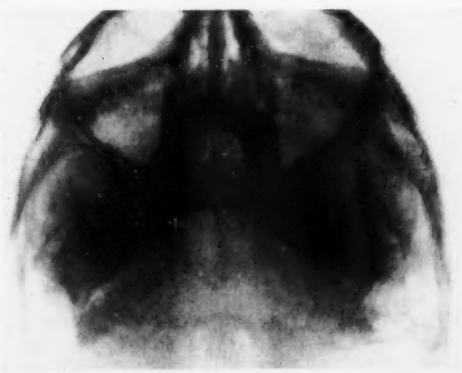
Roentgenographic examination revealed the position of the tooth near the zygomatic bone. To assure a correct diagnosis, a tooth image of identical form and size was formed of wax and inserted at a similar site in a model skull. Roentgenographic studies of the model skull were almost identical with the roentgenograms taken previously of the patient's skull. The removal of the tooth then became a routine matter.

Case 2. The patient, a 50 year old woman, was examined routinely at the clinic. A hard swelling was observed in the cheek extending from the middle of the masseter muscle posteriorly to a point just behind the angle of the mouth. Anteriorly and superiorly, the swelling reached to the zygomatic process, and inferiorly to the level of the lower teeth. On palpation, a copious flow of pus exuded from an opening distal to and slightly below the parotid duct. A blunt probe into the sinus revealed the presence of an abnormal cavity, almost the size of the swelling. Roentgenograms revealed the existence of an oroantral fistula in which a well developed tooth was embedded.

The obstruction of the parotid duct led to an increased pressure in the proximal end of the duct which forced saliva through the damaged portion. There was an accumulation of saliva in the neighboring tissues. The cavities thereby formed became infected and inflamed because of incomplete drainage.

Treatment consisted of the surgical elimination of the tooth, and establishment of adequate drainage together with the formation of a new opening to the parotid duct.

Figure 6 Sialogram showing the oroantral fistula with the embedded tooth near the duct of the parotid gland



Four days later the swelling and pain had subsided. Postoperative healing was uneventful, and the sutures were removed after one week. There were no undesirable sequelae such as paresthesia of the lip or interference with normal motor function, indicating that no damage had been done to branches of the trigeminal or facial nerves.

Mund-Zahn-Kieferklinik, Universität Heidelberg, Germany

Clinical and histological study of alveolar osteitis

Raymond F. Huebsch. *J.Oral Surg.* 16:473-482 Nov. 1958

For normal healing to take place after dental extractions in human beings, it is necessary for the blood clot, which fills the socket, to organize. This process can take place only when there is an adequate blood supply to the wound.

The only sources of blood supply to the dental socket are the capillaries in the periodontal membrane, the arterial blood supply via the apexes, and the rich capillaries in the gingivae and mucoperiosteum. In dental extractions, one of these main sources of blood supply may be destroyed or may become inadequate. If the blood supply is inadequate to nourish the clot, the clot will not organize; in time it will become necrotic and an alveolar osteitis or "dry socket" will occur.

During the past eight years, the author has used a technic which has reduced considerably the incidence of dry socket. A pointed instrument and a mallet are used to produce, mechanically, small perforations through the dense cortical bone lining the coronal portion of the bony defect, into the more vascular regions of the cancellous bone.

To demonstrate the healing process histologically, an experiment was performed on white rats. The mandibular left first and second molars of 20 male white rats 60 days old were extracted. The early stages of healing were studied at postoperative intervals of from 24 hours to 10 days. The first molar socket was perforated in numerous areas with a sharp plugger point mounted in an automatic gold foil condenser. The second molar socket was left alone for a control. Essentially the same observations were noted histologically in the rats as were observed clinically in human beings. In the microslides examined, when the blood supply to the socket was adequate for organization of the clot, there was early proliferation of fibroblastic tissue; where inadequate, there was a delay in healing and liquefaction of the clot. By the tenth postoperative day there was complete proliferation of the epithelium across the socket.

Mangos (1941) in a study of human material found the first histologic evidence of bone formation ten days after extraction. It may be concluded from these observations that healing in rats is about twice as rapid as in human beings, because of the greater metabolic rate in rats.

U. S. Navy Hospital, Philadelphia, Pa.

Incidence of extraction at the University of Oregon Dental School

Horace M. Miller. *Oral Surg.,Oral Med. & Oral Path.* 11:1226-1228 Nov. 1958

Records of 82,316 teeth extracted from July 1950 to July 1958 at the University of Oregon Dental School were compared with records of 57,280 teeth extracted from 1932 through 1935 at Northwestern University Dental School.

The percentage of maxillary anterior teeth extracted in the 1930's was lower than in the 1950's. Perhaps today more upper complete dentures are being made.

The percentage of maxillary first molars extracted today is lower than in the 1930's. Perhaps dentists today are saving more maxillary first molars. The same trend was observed for mandibular first molars. Today the percentages of maxillary and mandibular third molars extracted are higher than in the 1930's. More mandibular cuspids are being saved today.

Of the 57,286 teeth extracted at Northwestern University, 30,608 were maxillary teeth and 26,678 were mandibular teeth. Of the 82,316 teeth extracted at the University of Oregon, 44,380 were maxillary teeth and 37,936 were mandibular teeth.

Dental School, University of Oregon, Portland, Ore.

Prosthetic dentistry

Queen Mary's Hospital writing-aid

Anthony Westbrook.
Brit.M.J. No. 5074:826 April 5, 1958

Poliomyelitis has resulted in an increase in the number of physically handicapped children and adults. For those patients with complete paralysis of the hands, the dental department of Queen Mary's Hospital for Children has developed a writing aid which can be inserted in the patient's mouth.

The writing aid is adaptable to many uses and has a high degree of mobility and adjustability without being too cumbersome. The oral adjustment is achieved by upper and lower cast cap splints set in an open position by sprues. The whole unit is cast in white gold.

Impressions in an alginate material are required for the casting models. Care is taken that the metal does not contact the gingival margin. The two separate splints are "tried in" and a comfortable position is determined by wax built up in the mouth. A position too closed may tire the patients. The best result has been obtained by ascertaining the normal rest position and then opening the bite a little more. The splints are soldered into this position by the two lateral bicuspid sprues and a central sprue. The unit is tried in for any further correction, and a position of attachment for the extraoral part of the appliance is marked.

The main bar consists of a square rod 6 in. long, extendable from a square tube. Nickel silver is used. A screw secures the rod at the correct distance for writing and reading. An attachment consisting of an ordinary school compass with securing nut is soldered on at an angle of about 45 degrees to the rod. This attachment permits the use of a pen, pencil, paintbrush or a rubber attachment for an electric typewriter.

The appliance weighs less than 2 oz.

The first patient to use the writing aid was a 15 year old boy. He was cooperative, enthusiastic, but could not be placed in a sitting position. Within a day or two of practicing with the aid, he could write "yes" and "no" on paper. After three weeks he could write a letter, which maintained his characteristic writing. He has since taken a considerable interest in school life at the hospital and has obtained his general certificate of education. He now uses an electric typewriter.

Use of the writing aid has increased the patient's interest in life. His vital capacity rose from 900 cc. on admission in April 1953, to 1,200 cc. in April 1954 and to 1,483 cc. in December, 1954.

Queen Mary's Hospital for Children, Carshalton, Surrey, England

The writing aid in use

Surgical and prosthetic repair of maxillofacial defects after removal of oral tumors

J. J. Kruisbrink. *Tschr.tandheelk.* 65:543-564 Aug.-Sept. 1958

Surgical removal of oral tumors frequently leaves defects varying in size from a comparatively small opening to the complete loss of the palate or major parts of the masticatory system.

An obturator denture can be constructed to close practically every defect in the upper jaw, regardless of its dimensions, and to permit undisturbed masticatory and speech function.

Follow-up examinations are necessary to detect recurrence of the tumor which then can be treated without delay.

In the majority of instances, a satisfactory temporary denture can be inserted within a week after surgery. Patients in need of such prosthetic repair can be found in almost every community. The incidental functional disturbances must be treated as soon as possible in order to make life tolerable for such patients. As long as it is uncertain whether a recurrence of the tumor can be expected, the insertion of an obturator denture is preferable to plastic surgery.

Close collaboration between the oral surgeon and the prosthodontist is essential in order to obtain the best possible esthetic and functional result with the least loss of time and energy.

In instances in which roentgenotherapy is applied postoperatively, neither insertion of dentures nor tooth extraction should be performed before, during or after irradiation without consulting the roentgenologist.

In instances in which osteoplasty in the maxillofacial region is contemplated at a later stage, every effort should be made to prevent dislocation of fragments after resection of the jaws. Excessive strain to the periodontal tissue must be avoided in anchoring an obturator denture.

After resection of the upper jaw it is important to restore the continuity of the oral cavity by means of an immediate denture.

A satisfactory obturator denture, usually made of acrylic resin, must seal the oral cavity from the nasal cavity and must have excellent retention. If this is accomplished, the patient will have almost normal function, including speech, mastication and deglutition. The esthetic result, of course, depends on the amount of scar tissue present. Excessive stress cannot be exerted on scarred regions without causing breakdown of tissues. This, however, will not occur if proper impression and construction technics are used.

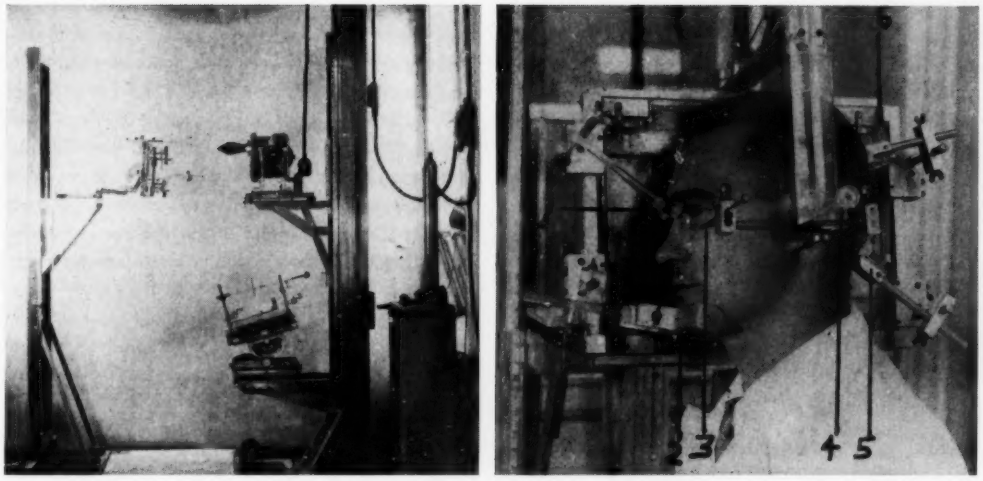
Models of the jaws in the desired bite relations should be made, preferably prior to surgery, and should be preserved in all instances of malignant oral tumors, even if no mutilating defect in the maxillofacial region is to be expected after the removal of the neoplasm.

About one week after surgery, a snap impression is taken in modeling compound or with an alginate impression material. The area surrounding the rim of the defect should be relieved. If teeth are present which can be preserved, an identical procedure is followed. If there are small openings in the maxillofacial defect into which impression material is not supposed to enter, plugging with cotton will prevent it; if there are openings into the antrum or through the septum where excess material may flow, removal of material is difficult. The final impression is taken in an acrylic tray with an alginate material.

The obturator must have anterior and posterior extensions which keep the appliance in position. Insertion would be impossible unless one of these extensions were movable. The weight of large obturators can be lessened if they are constructed hollow. The simplest technic is to construct the obturator denture in two sections, using a cementing medium to fuse the parts together.

In the creation of a lifelike esthetic obturator denture, every patient must be studied individually. In instances of facial deformity, whatever its cause, patients usually develop a despair psychosis resulting from embarrassment and feelings of inferiority. The defense mechanism in these patients promotes a voluntary withdrawal from society. Even in instances in which mental adjustment has been achieved, patients may feel themselves "different" after prosthetic or surgical repair of the defect. Generally, however, the patients will be able to forget their handicaps, take their normal place in society and live unnoticed among their fellow men.

Nederlands Kankerinstituut, Amsterdam, The Netherlands



Left: The assemblage, showing both lifts, cephalostats and the tube head. Right: Arrangement of clamps and braces to secure the head to the cephalostat. 1 = nose brace. 2 = chin rest. 3 = orbitale marker. 4 = removable ear guide. 5 = lower head clamp. 6 = upper head clamp

Roentgenology

The McClean cephalostat

Lincoln E. Sanders. *J.Missouri D.A.* 38:11-15 Nov. 1958

A new roentgenographic cephalostat, designed and constructed by Alexander W. McClean, has been in use for the past two years at the Washington University School of Dentistry, and has been of diagnostic value in treating lesions of the temporomandibular joint.

The McClean cephalostat (illustration, left) has been designed to position or reposition accurately the head for various conventional roentgenographic studies. Every degree of angulation and movement of the instrument is calibrated.

The machine has two lifts, each equipped with a carriage. One carriage conveys the cephalostat, the other the tube head. The cephalostat lift has a travel distance of 47 inches, and can be brought to a total height of 78 inches from the floor. It has a tunnel arrangement to receive a cassette. The tunnel has a ¼ inch external auditory meatus guide. The cephalostat also has a chin rest, nose brace and an ear guide for the other ear (illustration, right), which can be removed at the operator's discretion after the head is secured. There is an apparatus to establish the Frankfort plane.

The cephalostat can be rotated 90 degrees vertically or laterally. The tube head also can be rotated 90 degrees in a vertical plane. The lift is mounted on a truck resting on tracks, and can be moved back and forth at right angles to the tube head.

The tube head lift has a fixed position to the floor and the cephalostat is located directly under the tube head. These are parts of a compound lift. The cephalostat is motorized, and when in motion, the tube head moves with it. This is called the primary lift. The secondary lift, operated manually, conveys the tube head and can be elevated or lowered independently. Stereoscopic views can be made. The patient may either stand or sit.

The following advantages are claimed for the McClean cephalostat:

1. The ear guide can be revolved out of the way before the roentgenogram is taken, thus giving a clear view of the temporomandibular joint.

2. The cephalostat permits a view of the entire head.

3. The machine has possibilities for stereoscopic research.

4. The machine is accurate and permits superimpositions.

Washington University School of Dentistry, St. Louis, Mo.

Sensitivity to roentgen rays of normal and neoplastic tissues of the oral cavity: the role of the nucleic acids

Lucien Cornil and André Stahl. *Presse méd.* 59:933-935 July 1958

The cell of a malignant tumor, like any other actively metabolizing cell, is characterized by an increased amount of nucleic acids, both thymus nucleic acid and ribose nucleic acid.

Malignant oral tumors generally are richer in these two acids than benign neoplasms.

At the Cancer Center of the University of Marseilles, France, malignant tumor cells were arranged according to their established sensitivity to roentgen rays. The order of arrangement thereby obtained was found to be identical with the order if the same cell types were arranged according to the amount of nucleic acid.

Roentgenotherapy of malignant oral tumors produces a demonstrable decrease in the cell content of nucleic acids.

Studies of malignant oral tumors, basal cell carcinoma and lymphosarcoma revealed that the cell nuclei which occupy a large part of the cell volume are comparatively rich in thymus nucleic acid. The ratio between thymus nucleic acid and ribose nucleic acid, in comparison with that in normal tissue taken from the adjacent region, appeared elevated, probably because the neoplastic cell which contains ribose nucleic acid is poorly developed in relation to its nucleus.

The following conclusions were reached:

1. The sensitivity to roentgen rays of the cells of a malignant oral tumor is proportional to their nucleoprotein content.

2. The sensitivity to roentgen rays of these cells is greatest when the ratio between thymus nucleic acid and ribose nucleic acid is highest.

3. The principle of interrelationship between sensitivity to roentgen rays and nucleic acid content of malignant tumor cells is not in contrast to the findings by Bergonié and Tribondeau.

4. Further research is necessary to discover by which mechanism roentgenization acts on the nucleoprotein of tumor cells, whether there exists a direct action or whether the decrease in demonstrable nucleic acids after roentgenization is due to enzymatic changes which interfere with the cell metabolism.

The cytochemical detection of nucleic acids, combined with a technic for microanalysis, should provide a method for determining and evaluating in advance the behavior of human tumor cells during and after irradiation.

Anti-Cancer Institut, Université de Marseille, France

Radiography of the alveolar crest

E. Harndt. *Internat.D.J.* 8:398-399 June 1958

It has been reported many times, on checking therapeutic results in patients with severe periodontitis, that new alveolar bone has formed after treatment, and that the new bone can be seen in roentgenograms. However, it is rightly argued that the pictures have not been taken under exactly similar conditions and hence that the pictures are illusory.

The writer has evolved a method of accurate assessment of such partial regenerations. The instrument is so constructed that control pictures can be obtained under similar conditions even after long intervals between treatments.

The angled film holder is provided with a four-edged sheath to which is fastened a mass of softened impression material. The film is held parallel to the object to be filmed and the patient is instructed to bring his jaws together so that the teeth impress themselves on the compound. After the compound has hardened, the holding rod of the film holder which is fastened to the cone of the x-ray machine is pushed into the impression sheath, and the picture is taken.

The position-impression is preserved; it fixes for all future roentgenograms the identical position of the projection. In order to indicate even

minute changes of tissues on the pictures used for comparison, a positive transparency is made of the first roentgenogram and the control picture taken in the same position is placed over it so that the contours exactly fit in each other.

When the pictures are held to the light, there will be compensating shades of light on the changed sections of the films. The newly formed bone areas will be recognizable and will permit an exact assessment of the extent of regeneration.

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Roentgenographic techniques utilized in dental practice

Jack Budowsky, Austin H. Kutscher, Edward V. Zegarelli, James Mercadante, Ferdinand Tuoti, John D. Piro and Franklin Earnest. *New York State D.J.* 24:294-299 Aug. 1958

A questionnaire was distributed to ascertain the roentgenographic technics currently being employed in dental offices.

Despite the publicity given the National Academy of Science's report on the biological effects of radiation, only 21 of the 62 respondents had read the report. Thirty-two dentists reported patients had objected to the taking of further roentgenograms.

Fourteen dentists reported that their x-ray machine was 0 to 5 years old; 13, that the machine was from 6 to 10 years old; 8, 11 to 15 years old; 14, that it was 16 to 20 years old; 10, 21 to 30 years old, and 2 that the x-ray machine was over 30 years old.

Eleven dentists reported they used fast x-ray film and 19 that they used ultra-fast film. Seventeen used radiotized film.

Fourteen dentists said they used no special filtering devices; 15 reported using aluminum disks.

Five dentists reported that they or their assistants occasionally used their fingers to hold films in the mouths of patients; this in spite of repeated warnings in the literature as to the dangers of this practice.

Twenty-nine dentists reported their office had been checked for stray radiation and 30 reported it had not.

Although 48 dentists said they had a timer cord more than 5 feet long, only 35 said they took advantage of the full cord length when possible.

Three dentists used leaded aprons for accessory protection from radiation, and four provided their patients with leaded aprons.

There is a need for more rapid replacement and rechecking of existing dental x-ray machines. Some methods of improving education in relation to radiation hazards must be developed. A study of scatter radiation in dental offices should be undertaken.

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Use of the eyes in roentgen diagnosis

Frank A. Riebel. *Radiology* 70:252-258 Feb. 1958

Certain practical suggestions for systematic study of roentgenograms are presented. A fixed routine is recommended for scanning roentgenograms in such a manner that no details are overlooked. Adherence to a definite roentgenographic study plan and constant practice to expand the operator's visual fields are essential. The efficiency of the first quick survey of a roentgenogram is enhanced if the operator, by practice or formal training, expands his visual fields to comprehend more territory at a glance or on successive fixations.

Complete dark adaptation is essential for fluoroscopy. The use of red goggles never produces complete adaptation to darkness, but gradual adaptation proceeds more rapidly if red goggles are worn. On the average, four minutes are required in complete darkness—after red goggles have been worn for 20 minutes—before the eyes are ready to observe dense parts.

The adaptation to darkness decreases rapidly after exposure to bright light, and there is a considerable loss of the visual faculty if roentgenograms are viewed for a long time even through red goggles. Peripheral vision, therefore, should be used habitually (except in studies of rapid motion) and will contribute significantly to the correct interpretation of roentgenograms.

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Histology

Electronmicroscopic investigations of the development of ameloblasts and enamel

Hans Lenz. *Deut.zahnärztl.Zschr.* 12:1568-1576 Nov. 15, 1957 and 13:991-1005 Sept. 1, 1958

Tooth germs of human fetuses (from four to five months old) and molar tooth germs of albino mice (from one to three days old) were used as study materials for an electronmicroscopic investigation at the Micromorphological Institute of the Free University of Berlin.

Electronmicroscopic examinations of extremely thin sections revealed that the cells of the inner enamel epithelium are not divided by intracellular spaces as it previously was assumed but that these cells consisted of compact cell units (Fig. 1). Because the electronmicroscopic findings varied significantly from those obtained by optical microscopy, they may be of importance in the evaluation or re-evaluation of the correctness of the classic theories on the development of enamel structures.

Comparison of the electronmicroscopic results with those of previous optical microscopic studies demonstrated that the technics used in the preparation and fixation of specimens for optical microscopy cause certain changes (artifacts) within the observed cell structures which frequently have led to misinterpretations because these artifacts were considered as true structures. If, however, the specimens are fixed immediately after removal from living tissue and the Palade fixation technic is used which was designed for electronmicroscopic studies only, these artifacts do not appear.

The various stages of development of the organic matrix were studied in extremely thin sections of human and animal tooth germs. The electronmicroscopic investigation revealed that the inner enamel epithelium appears to be different than the classic etiologic hypotheses assumed. The ameloblasts of the enamel anlage which seemed to be homogeneous in optical microscopic studies, appear in the electronmicroscope as lying close together with their cell membranes. The protoplasms are primarily granular in structure (Fig. 2).

In addition to the small granules found in differential staining in cell cytoplasms (mitochondria), comparatively small amounts of endoplasmic reticulum were observed. The inner enamel epithelium appeared separated from the dental papillae of the pulp by a continuous membrane. The fibrils of the outer region of the pulp, the initial appearance of the dentin matrix, invaded this membrane.

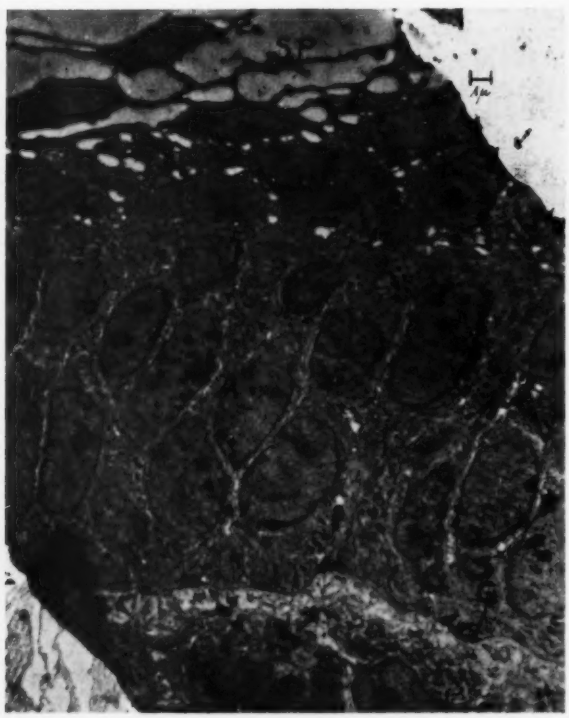

Figure 1 Inner enamel epithelium before the initial enamel development. A = ameloblasts. O = odontoblasts. Sti = stratum intermedium. SP = pulp membrane. G = border membrane

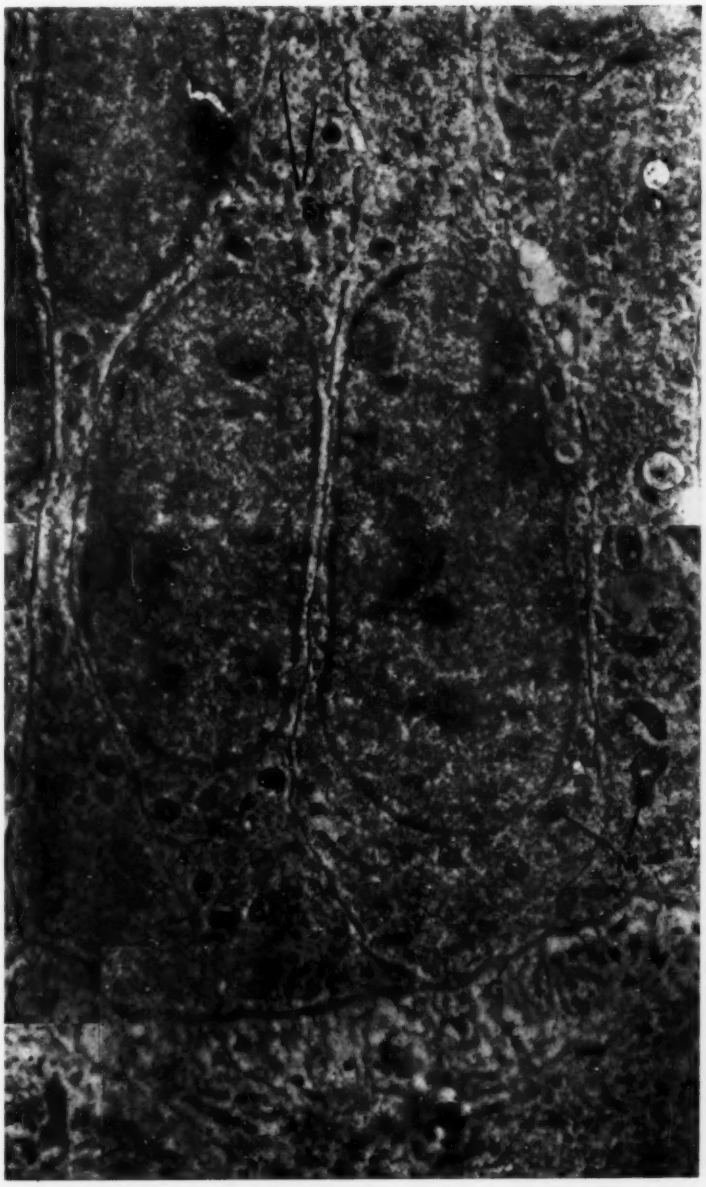

Figure 2 (above) Ameloblasts at the pulp border before initial enamel development. Er = endoplasmic reticulum. Zm = cell membrane. M = mitochondria. G = border membrane

Figure 3 (right) Ameloblasts before enamel development. The protoplasm exhibits endoplasmic reticular cells. First layer of the enamel matrix

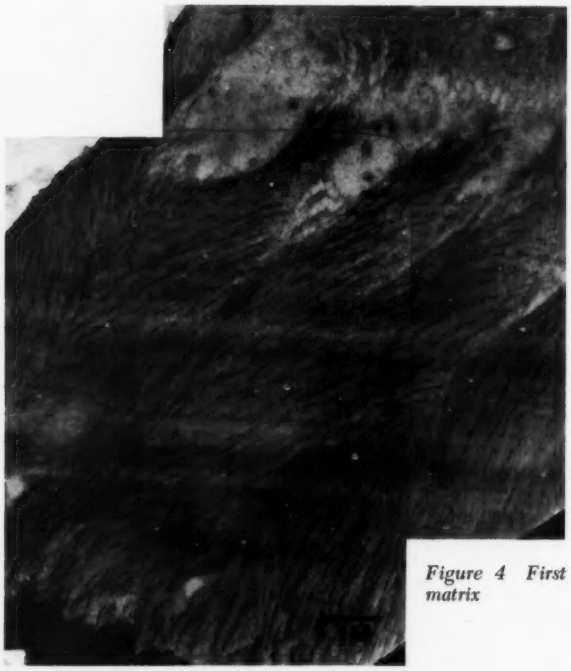

Figure 4 First layer of the enamel matrix

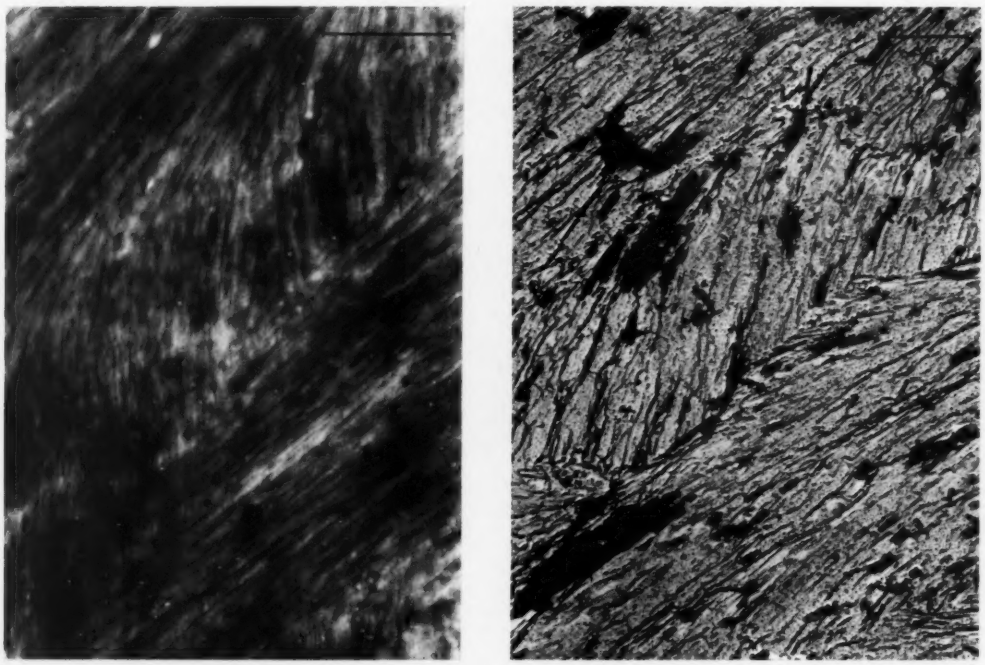

Figure 5 Left: Organic enamel matrix. Right: Borderline between two prisms of the enamel of a human molar

After completion of the formation of the initial layers of predentin and the beginning of their calcification, the ameloblasts produce the organic matrix which consists of submicroscopic fibrils (Fig. 3). At this stage, the appearance of the enamel cells differs considerably from that of the previous stages. In the protoplasms, the endoplasmic reticulum dominates.

Recent biochemical investigations have demonstrated that in the lamellar parts of the endoplasmic reticulum, several fermentative systems are active which may be associated with a synthetic activity of the cells (cell differentiation). This seems to indicate that the changes occurring within the protoplasm of the ameloblasts and those within the submicroscopic fibrils are related to each other and that, therefore, the ameloblasts are the cells which produce the enamel prisms.

In contrast to the development of dentin in which the collagen fibrils of the matrix remain outside of the odontoblasts, the keratinlike fibrils of the enamel matrix originate directly in the protoplasm of the ameloblasts. These fibrils appear in electronmicroscopic examinations in bundles with a characteristic featherlike arrangement (Fig. 4). The initial spaces between these fibril bundles, however, disappear during the later developmental periods.

During the mineralization of the enamel, the organic matrix gives rise to a specific orientation of the hydroxyapatite crystals, thereby determining the enamel pattern. This epistasy becomes evident in electronmicroscopic studies by the conformity of the orientation of the fibrils and crystals and can be observed by comparison of the thin sections of the uncalcified organic matrix with replicas of mineralized mature enamel.

Previously it had been assumed that microscopic prisms such as those of the interprismatic substances or prismatic sheaths are structural enamel units which develop within the ameloblast layers. The recent electronmicroscopic investigation proved that only the submicroscopic organic fibrils and the hydroxyapatite crystals can be regarded as the structural components of enamel.

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Studies on mineralized dental tissues XII. Microradiographic studies of caries in deciduous teeth

Gunnar Bergman, Erna Hammarlund-Essler and Lennart Lysell. *Acta odont.scandinav.* 16:113-126 Aug. 1958

Caries in the deciduous teeth has been considered to have special characteristics, owing to the fact that part of the crowns are formed after birth, and that this part is regarded as of poorer quality. The borderline between prenatal and postnatal hard tissue is the so-called "neonatal line" (Rushton, 1933 and 1939, and Schour, 1936).

Ground sections prepared from 80 deciduous teeth with carious lesions were studied by transmitted light and with the microroentgenographic technic.

On microroentgenograms of healthy enamel and healthy dentin, the neonatal line appears as a dark line; that is, it has a lower mineral content than the immediate surroundings. The appearance of the line in carious enamel suggests that it may be not a single line but a group of lines in the borderline between the prenatal and postnatal enamel. With visual evaluation of the microroentgenograms it was not possible to establish any difference between prenatal and postnatal enamel with respect to mineral content.

In most instances the carious lesions in deciduous teeth have the same microroentgenographic appearance as those in permanent teeth. According to the present material, it is uncommon for such a lesion to be altered at the neonatal line. In two instances, however—one of retrograde caries—the lesions seem to have been modified at this line.

In the areas of the microroentgenograms corresponding to carious dentin, a varying pattern of "unmasked" incremental lines is present. Although these lines can be traced into the healthy dentin, they are more difficult to identify at this

site. The lines are present before development of the carious lesion, which causes them only to become more prominent. The irregular distribution of the lines indicates that great variations exist in the developmental rhythm. The lines occur chiefly in the part of the dentin formed during the period from birth up to about ten months of age.

It is probably justified to regard the pattern of incremental lines in the carious dentin as an accentuation of the less distinct pattern in healthy dentin.

The microroentgenographic technic appears to be a valuable tool in the study of the incremental pattern of the dentin. The method seems suitable for eliminating some of the sources of uncertainty inherent in the conventional methods.

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A study of the structure, chemical nature, and development of cementum in the rat

K. J. Paynter and G. Pudy. *Anat.Rec.* 131:233-251 June 1958

A histological and histochemical study was made of the nature and the development of cementum on molars of rats of the Carworth strain, ranging in age from 10 to 101 days.

Noncellular cementum, which covered the coronal one-third to one-half of the root, consisted of layers of thin, amorphous, fiber-free cement substance alternating with layers of thicker material containing collagen fiber. The latter layers varied in thickness and number, depending on their location on the tooth and the age of the animal. A conspicuous amorphous layer always was found between fibrous cementum and the dentin of the root beneath both the noncellular and cellular cementum. At the cervical region this layer formed the medium through which the cells of the oral epithelium were attached to the tooth. With the exception of the amorphous line between it and dentin, all cellular cementum contained fibers, although the arrangement of the fibers was much more irregular than in noncellular cementum.

The ground substance in both the amorphous and the fibrous substance in cementum appears similar histochemically, although the reactions of the former are much more intense, probably because the relatively large amount of nonreactive collagen in the latter masked the reactions within it. Amorphous and fibrous cementum were similar histochemically to the cement lines and matrix of bone, respectively.

The layer of amorphous cementum next to dentin first appeared as a basement membrane on the pulpal surface of the epithelial root diaphragm. It was continuous across the diaphragm and along the side of the root, becoming metachromatic at the level on the root where the epithelial root sheath disintegrated.

Cementoblasts were readily identifiable in relation to developing cellular cementum but not in relation to noncellular cementum. This was believed to be related to the rate of development of the two materials, the former developing much faster.

Some of the necrotic substance commonly seen between cellular cementum and the root dentin was found to consist of cells from the epithelial root sheath which became trapped against the root dentin by the rapidly forming cementum.

This study confirms the general structural arrangement of dental cementum and provides information concerning the chemical nature of the material and new knowledge of its origin.

Although it has been generally reported (Orban in 1957, Schour in 1953 and Held in 1951) that cementocytes do not retain their vitality within the lacunae or cellular cementum, it was noted in this study that in the rat, at least to the age of 101 days, there was no evidence of lack of vitality of such cells.

On the basis of the observations of cementum development here reported, the generally held belief that cementum first appears as a deposition on the root produced by cells which have differentiated from others within the dental sac requires modification. The innermost layer of cementum first appears as a basement membrane on the pulpal surface of the root diaphragm. Cells from the dental sac thus play no part in its formation.

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Orthodontics

Masticatory system and facial profile in teleroentgenograms

Erich Hausser. *Österr.Zschr.Stomat.* 55:339-351 July 1958

The constantly changing skeletal structures of a child's head, especially of the facial profile and the constituent parts of the masticatory system, reflect the successive stages of growth and development.

During this developmental period, the following changes may be observed: (1) the increase in the size of the facial bones, and (2) the adaptation taking place within these bones caused by alterations in the cell complexity and by subsequent modeling of the bone cortex, especially in the region of the temporomandibular joint.

The final shape of the individual facial profile results from the phylogenic influences that various endogenic and exogenic factors exert during the period of craniofacial development.

The early recognition and evaluation of the relations existing between the total facial profile and the constituent parts of the masticatory system, especially the dentition, often disclose variations and abnormalities such as differences in proportion between facial height and breadth or variations of the angles of the facial profile. The results of these examinations are extremely important for orthodontic diagnosis and prognosis.

Some of the relations between the facial profile and the constituent parts of the masticatory system can be demonstrated by the customary cephalometric technics such as gnathostatics and laminagraphy.

To further studies of craniofacial development in children, however, more knowledge is needed to evaluate the skeletal maturation and the chemical and physical growth and to determine the presence of other factors that influence the type and rate of pathologic changes.

Teleroentgenography is the method of choice because it permits projection, superimposition and tracing of the minutest details of variations occurring at the cranial, facial and intraoral planes. Skeletal growth and development of the facial profile and the masticatory system may progress independently according to specific biologic time schedules. The determination of the biometric mean values of the essential variations occurring in the maxillofacial region can be accomplished best by interpretation of teleroentgenograms.

The detailed mechanism by which the coordination and the gradual growth of the face and the masticatory system are achieved presents not only a fascinating chapter of human biology but

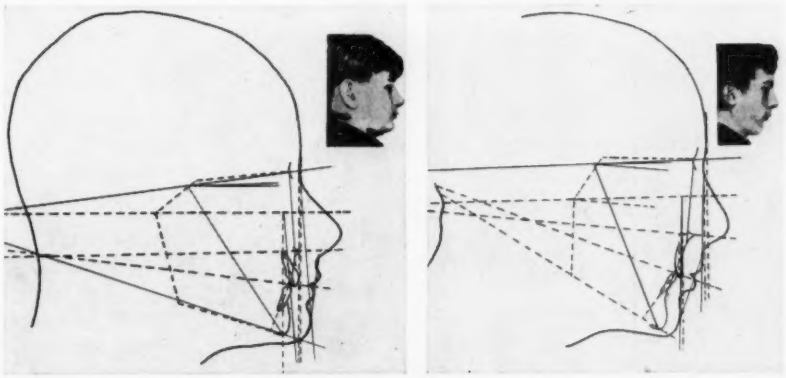


Figure 1 Teleroentgenographic tracing of the facial profile. Left: Anatomically correct dentition. Right: Retarded skull development

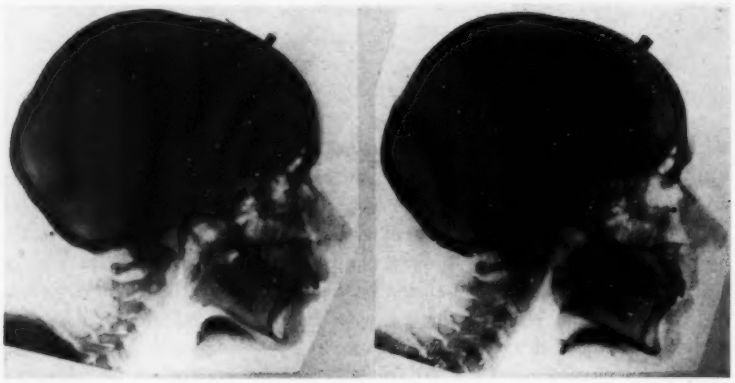
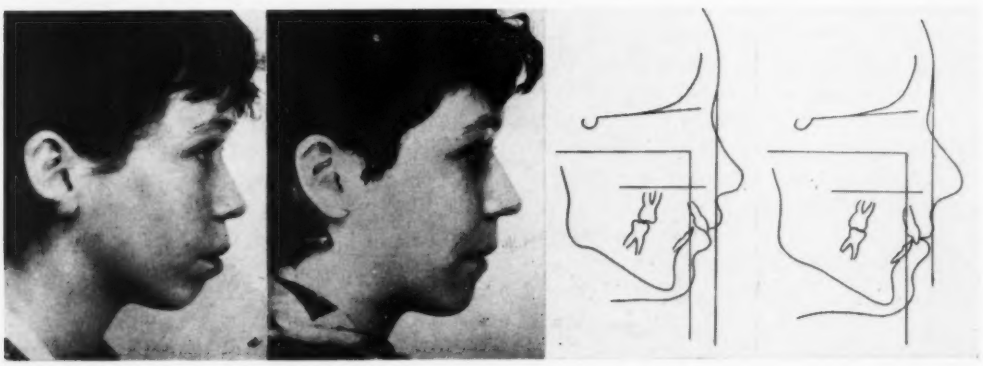


Figure 2 Teleroentgenograms before (left) and after (right) orthodontic treatment

Figure 3 Teleroentgenograms before (left) and after (right) orthodontic treatment

Figure 4 Correction of the facial profile by orthodontic treatment. Patient and teleroentgenographic tracings before and after treatment



an accumulation of the essential facts which are valuable for orthodontic diagnosis and prognosis.

Several authors have demonstrated by studies of teleroentgenograms and their tracings that the plane of the palate, the occlusal plane and the plane of the lower mandibular border maintain a constant angular relationship to each other and to the facial profile.

The interpretation of teleroentgenograms and tracings before and after orthodontic treatment frequently furnishes the only available criterion for success or failure.

Teleroentgenography meets the requirements for longitudinal measurements of pathologic changes occurring in all skeletal parts of the skull. Their images in teleroentgenographic projections, tracings and superimpositions are within the limitations of scientific anatomic accuracy.

Although the teleroentgenographic apparatus is comparatively recent in design and construction, it appears that it has several satisfactory possibilities of application in orthodontic practice.

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Frequency of allergy in orthodontic patients

Walter J. Straub. *J.Philippine D.A.* 11:4-13 July 1958

To determine the frequency of allergic tendencies in children seeking orthodontic treatment and children already under orthodontic treatment, 104 patients (58 girls and 46 boys) of the orthodontic division of the University of California College of Dentistry were examined in the following manner:

1. A medical examination was made with additional studies of blood counts, basal metabolism and urinalysis.

2. In the family and personal history, attention was given to any possible allergic manifestations occurring in the past or present.

3. Children with positive, questionable, or borderline histories of allergy were given both scratch and intradermal tests with the following allergens: three grasses; three weeds; milk, eggs, wheat and house dust, and four danders. The 104 patients were divided into an allergic group, a borderline group and a nonallergic group.

4. The mucous membrane of the entire oral cavity was examined for the presence of allergic manifestations.

5. A determination of the *Lactobacillus acidophilus* index was made in 64 patients.

6. The allergic patients also were grouped according to Angle's classification for the type of malocclusion.

Of the 104 patients, 41 (39.4 per cent) were allergic, 13 (12.5 per cent) were borderline, and 50 (48.1 per cent) were negative.

Among the abnormal conditions revealed by the medical examinations were the following: allergies of all descriptions, adenoids, endocrine disturbances (thyroid and gonadal dysfunctions, diabetes and so forth), congenital heart disease, syphilis, malnutrition with an early history of rickets, tuberculosis, sinus and mastoid diseases, and cleft palate and cleft lip. These conditions were distributed among the allergic and nonallergic patients.

Blood studies showed that the hemoglobin content and the numbers of erythrocytes and leukocytes were normal with few exceptions. Eosinophil counts in 74 children were made; of the nonallergic patients, 10 had eosinophil counts higher than 2 per cent whereas the remaining 22 patients had counts within normal limits; among the borderline patients, three had high eosinophil counts.

Thirty-nine of the 41 patients with chronic nasal allergy were classified as to type of malocclusion, as follows: Class II, Division 1, 22 patients; Class I, 15; Class II, Division 2, 1 patient, and Class III, 1 patient. That 61.5 per cent of the patients with chronic nasal allergy exhibited the typical picture of nasal blockage and paranasal depressions, pinched nares, contraction of the maxillary arches with protraction of anterior teeth, receding chins and lack of development in facial growth suggests that in most instances of nasal blockage, allergy must be suspected and considered related to the development of dentofacial anomalies.

A pronounced gingivitis, which could be distinguished from acute inflammation and hypertrophy of the gingiva as allergic in type, was found in seven (17 per cent) of the allergic patients. The interproximal tissue was, in many instances, slightly puffy and had changed from the usual coral pink to purplish whitish pink.

No relation between allergic tendencies and the presence or absence of lactobacilli was found.

The cephalometric studies of Brodie (1940) demonstrated that the growth patterns of the craniofacial complex do not change much from birth to maturity. An allergic tendency as an influencing agent in the growth of the face must be taken into account as an important factor in nasal, sinus, facial and jaw growth.

One of the most effective ways of reducing the incidence of dentofacial anomalies may be the early detection of chronic nasal or respiratory allergy with subsequent treatment to eliminate it. Both physicians and dentists should direct their attention to the early recognition of chronic nasal or respiratory allergy as an important factor in the etiology of dentofacial anomalies, and should institute treatment for the eradication of allergies.

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Orthodontic treatment after surgical closure of cleft lip, cleft jaw and clefts in the hard and soft palate

Dieter Dummler. *Kartei zahnärztl.Praxis* 8:6-7 Sept. 1958

Malposition of the teeth, caused by postoperative cicatrization and requiring orthodontic treatment, frequently occurs after the surgical repair of congenital defects in the maxillofacial region. In the majority of patients, these positional anomalies develop after surgical closure of clefts.

The orthodontic treatment of postoperative malformations requires great experience and skill. Cooperation between orthodontist and oral surgeon and, sometimes, prosthodontist, is a prerequisite for favorable prognosis and successful therapy, because orthodontic treatment alone seldom obtains the desired maximum of a functionally and esthetically satisfactory result.

Prior to treatment roentgenographic examination determines whether the tooth primordium has been disturbed or impacted teeth are present. Usually, clefts in the maxillofacial region produce a narrowing of the upper jaw and a shortening of the upper dental arch, especially in the anterior region. The lower jaw, however, develops almost normally so that the disharmonies between both dental arches produce pseudoprognathism associated with either cross-bite or open bite.

After surgical closure of maxillofacial clefts, early orthodontic treatment is mandatory because it will influence the growth potential but will not alter its limitations. Treatment should be directed toward providing the environment for normal development of the dental arches and obtaining a condition favorable to normal function of the entire maxillofacial system.

As members of the cleft palate team, the orthodontist, and later the prosthodontist, are in a position to render an important service for the cleft palate (cleft lip and cleft jaw) patient who is truly dentistry's crippled child. The orthodontist's skill and knowledge make him—much more than the oral surgeon or the speech therapist—the designer and the architect of the corrected but still growing face of the child with cleft lip or cleft palate. If orthodontic care is initiated as soon as possible after surgery, the necessity of secondary treatment (prosthetic and speech) is minimized. As a result of successful orthodontic treatment, the dental arches are more functional and the possibility of normal speech and esthetic appearance is increased.

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Anatomy

The dentition of the Alaskan fur seal

Robert B. Chiasson. *J.Mammal.* 38:310-319 Aug. 1958

The characteristics of the mammalian dentition have long been considered to be of the greatest phylogenic significance. The tooth patterns have been important not only in differentiating between species and genera but also in determining the relationship of orders. The fact that mammalian teeth are heterodont is used as a criterion in class definition; even the origin of this great mammalian group has been demonstrated primarily by the fact that mammals, like synapsidan reptiles, have a thecodont dentition.

The investigation of the dentition of the Alaskan fur seal, *Callorhinus ursinus,* attempts to clarify the position of the *Pinnipedia,* the suborder of aquatic carnivorous mammals which includes all species of seals and walruses. Their tooth patterns especially were studied.

Fur seal specimens used in this study consisted of 3 subadults and 2 pups, embalmed or preserved in Formalin, and 40 female and 9 male skulls from seals ranging from newborn to 18 year old adults.

For comparative purposes, skulls of three *Zalophus* (California sea lion), one *Otaria* (eared seal) and two *Eumetopia* (elephant seal) were studied.

The upper right canines of 15 additional fur seals of known age and sex were sectioned.

The teeth of the Alaskan fur seal are haplodont, and either single-rooted or double-rooted. Incisors and canines are single-rooted; premolars are incompletely double-rooted. This double-rooted condition, however, is the result of a post-eruptive constriction of the roots rather than that of a pre-eruptive development of two separate roots. This type of tooth development has been observed in some reptile species but not in any other mammal.

The tooth formula of the adult Alaskan fur seal is as follows:

M	P	C	I	C	P	M		
2	4	1	6	1	4	2	=	20
1	4	1	4	1	4	1	=	16
								36

The exposed enamel of all erupted teeth is discolored. The discoloration begins at the tip of the crown and progresses toward the cingulum during eruption. By recording the amount of tooth exposure and discoloration in a seal pup, the sequence of eruption can be determined.

Microscopic examinations of the tooth structures under ordinary light revealed no lamellar arrangements. Growth layers were discernible if polarized light was used and became even more distinct when placed between crossed polaroids. Interference colors were at a maximum in the dentin at 90 degree intervals of analyzer rotation, indicating the existence of a preferential arrangement of the crystalline structure of each layer.

It can be concluded that the dentition of the Alaskan fur seal is the result of progressive evolutionary processes. It seems unlikely, however, that the complex creodont teeth of its ancestors could degenerate to haplodont teeth possessing a definite cingulum and a substantial enamel layer. In contrast to the opinion of many authors, the possibility of a retrogressive evolution or of tooth degeneracy can be ruled out. The dentition of fossil seals was never more complex than that of recent seals.

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Endodontics

Periapical foci of infection: antibiotic and antiseptic treatment

H. Egyedi. *Deut.zahnärztl.Zschr.* 13:1090-1095 Sept. 15, 1958

Many theories on the etiology, symptomatology and therapy of periapical foci of infection have been suggested in dental and medical literature. Among these theories there seems to be a surprisingly great inconsistency. The various authors seem to be unanimous only in the opinion that the presence of periapical foci of infection affects the general health.

Infection of the periapical region is the most significant symptom of pulp necrosis and gangrene. Treatment must be directed toward elimination of the cause of infection, and it is not always necessary to consider principles of biomechanics.

Widening of the root canal (not of the apex) and thorough sterilization until two or three tests show that no bacteria are present on the paper point inserted are prerequisites for successful treatment. Root canal filling and removal of calculus are the next procedures.

There exists ample evidence that pyogenic cocci are the causative factors of periapical focal infection. Many authors assume that all oral granulomas are caused by multiple infection, whereas other authors assert that at least some of the types of oral granuloma are produced by a gradual infiltration of munonucleated cells into the periapical region, and bacterial infection—if present—represents only a secondary cause.

Bacteriologic investigations by the author revealed that in 70 patients examined, all pathologic changes in the dentoalveolar region were caused by pyogenic foci of infection. These findings were substantiated recently by the result of bacteriologic studies (O. Guthof) and by the conclusions reached in a series of animal experiments (W. Meyer and G. Stein).

That pyogenic microorganisms are the only causative factors in the development of dentoalveolar abscesses, necrosis or gangrene of the pulp, and apical periodontitis, has been demonstrated further by the author's penicillin and antiseptic treatment of more than 300 patients (200 with gangrenous pulp). All pathologic changes occurring in the periapical region were recorded roentgenographically before, during and after treatment. In this series, complete cure was obtained in all instances.

Before introduction of antibiotic therapy, there existed only a vague idea of the significance of periapical foci of infection in the development of pathologic general and local alterations; changes in the patient's resistance to a chain of diseases were thought to be responsible for "blind abscesses" in the region involved. At that time, accurate determination of the causative factors of periapical infections was impossible. Only after reports of successful antibiotic and antiseptic treatment methods appeared in the literature was the uncertainty removed.

Use of penicillin and other antibiotics in dental practice, especially in root canal treatment, still

Figure 1 Subacute abscess of the lower right first molar. Left: Initial treatment. Center: After root canal treatment. Right: One and a half years after treatment

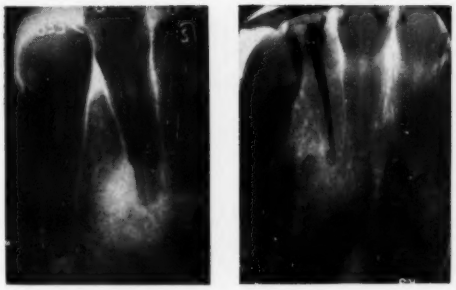


Figure 2 Dental granuloma. Left: Before treatment. Right: One year after treatment

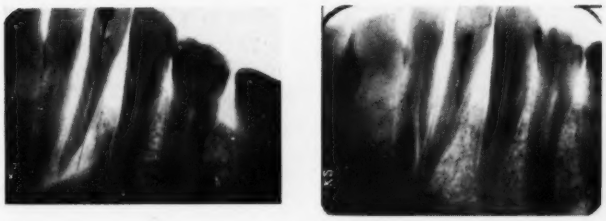


Figure 3 Periosteal swelling. Left: Initial treatment. Right: One year after treatment

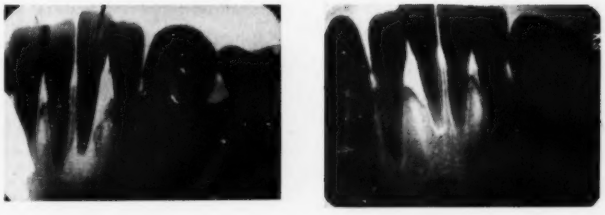


Figure 4 Dental granuloma with fistula and intraalveolar necrosis. Left: Initial treatment. Right: Two years after treatment

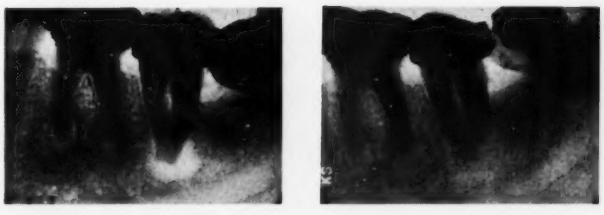


Figure 5 Intraradicular granuloma of the lower right first molar reaching to the second molar. Left: Initial treatment. Right: Two years after treatment

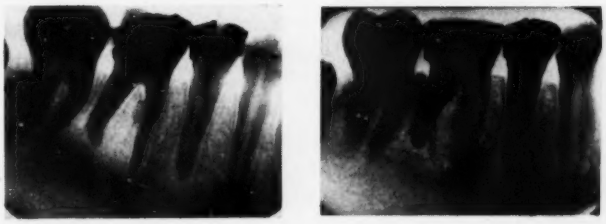


Figure 6 Dentoalveolar abscess of the lower left second molar closing one root canal completely. Left: Initial treatment. Right: Two years after treatment

appears influenced by the following two factors: (1) endodontic treatment without adequate roentgenographic and bacteriologic control, whether penicillin procaine in oil suspension, penicillin combined with streptomycin or a poly-antibiotic paste (advocated by Grossmann) is used; (2) persistent fear of developing bacterial strains resistant to penicillin or other antibiotic agents. Recent bacteriologic studies carried out at the Medical Faculty of the University of Leiden, The Netherlands, revealed that the comparatively small doses of penicillin used in endodontic practice do not produce resistance to penicillin in *Streptococcus viridans*, the common causative factor of infections occurring by the way of a pulpitis or through the blood stream. The usual dose used in endodontic practice is about one tenth of that used in intramuscular injection.

The endodontist is mistaken if he believes that one or two paper points free of bacteria are sufficient proof of complete destruction of all pathologic bacteria within the pulp chamber and the root canal.

Roentgenographic findings are necessary not only to detect the presence of chronic dentoalveolar abscesses and granulomas caused by periapical foci of infection but also to augment the bacteriologic findings which, unfortunately, are often inadequate and misleading.

The treatment of chronic infection in the periapical region not only must be directed toward complete elimination of the causative factors but it must also effect the replacement of granulation tissue by normal osseous tissue. Success of treatment can be demonstrated only by roentgenographic evidence.

The author proposes the creation of a World Conference on Endodontics, not necessarily connected with the Fédération Dentaire Internationale, which will demonstrate the significance of roentgenographic control. The group of endodontists, recently meeting in Philadelphia, discussed several endodontic topics but avoided mentioning that the only true evidence of successful root canal treatment consists of roentgenographic findings before, during and after endodontic treatment.

Koningslaan 2, Amsterdam C, The Netherlands

Palpable edema after insufflation of air into the root canal of an upper central incisor: report of case

Jules Magnin. *Rev.mens.suisse odont.* 68:437 May 1958

The patient, a 30 year old woman, showed severe discoloration of all upper anterior teeth. The suspicion of dental foci of infection was confirmed by roentgenographic examination.

Endodontic treatment of the upper left central incisor was indicated but proved to be difficult. The root was abnormally short and the apex considerably extended.

In spite of thorough and lengthy treatment, pus accumulated in the root canal and was continuously discharged. Aspiration of the purulent matter was attempted with a small pump. Insufflation of a comparatively small amount of air into the root canal caused pain in the region of the left eye followed by swelling and temporary ocular paralysis.

Clinical examination revealed the presence of an edema causing a complete closure of the left eye.

After a few hours of rest, the edema decreased in size and vanished as suddenly as it appeared.

The endodontic treatment was concluded successfully.

20 Passage du Terraillet, Geneva, Switzerland

Garlic extract in root canal treatment

Maria Kruczkowska. *Czas.stomat.* 11:567-573 Sept. 1958

Allium sativum L., known as garlic, yields about 0.1 per cent of a volatile oil which has been reported to possess therapeutic properties attributed to the presence of diallyl sulfide, acrolein or similar unsaturated aldehydes, and to a chemically undefined group of substances designated as phytoncides.

At the Dental School of the University of Gdansk (Danzig), Poland, alcohol extract of garlic is used in root canal treatment because of its antibacterial activity. Treatment usually is carried out in two or three sittings together with a systematic bacteriologic control.

Prior to its use for endodontic treatment, the bacteriostatic and bactericidal action of the garlic extract had been tested in vivo and in vitro. When tested by the cylinder-plate method against streptococci, staphylococci, bacilli, coccidia and enterococci, using the technic employed for penicillin tests, alcohol garlic extract showed an activity equivalent to about 15 penicillin units per milligram. This extract is active against both gram-positive and gram-negative bacteria.

All patients treated at the dental clinic were called for checkups from 3 to 18 months after completion of endodontic treatment. No pathologic symptoms and no roentgenographic alteration in the periodontal tissues were found. The employed garlic preparation unquestionably posesses bacteriostatic and bactericidal properties which remain active for a comparatively long period.

Because of these properties, the use of alcohol extract of garlic will shorten endodontic treatment without exerting any unfavorable influences on the periodontium.

Z Zakladu Stomatologii Zachowawczej, Gdansk, Poland

Antibiotic treatment of gangrene of the pulp

E. Rozkovcová, J. Kominek, D. Kubelka and L. Záhorová. *Prakt.zubni lékař.* 6:65-68 March-April 1958

In gangrene of the pulp the bacterial invasion causing the death of the pulp usually is preceded by severe inflammation.

Two types of pulp gangrene should be distinguished: dry gangrene and moist gangrene.

In dry gangrene, a gradual death of the involved tissue occurs. The tissue fluids have time to escape and the bacterial infection develops comparatively slowly.

In moist gangrene, sudden death of the pulp occurs. The tissue fluids cannot escape and the bacterial activity is increased. This type of gangrene often is associated with thrombosis of the connecting blood vessels. Necrotic cells are difficult to distinguish from vital cells.

Bacterioscopic examinations of 58 patients with gangrene of the pulp (in the majority of instances preceded by acute pulpitis) were carried out at the Second Dental Clinic of the University of Prague. The following microbial species were found: (1) *Diplococcus pneumoniae,* in 46.4 per cent; (2) *Neisseria discoides,* in 38.5 per cent; (3) *Streptococcus alpha hemolyticus,* in 33.3 per cent; (4) *Staphylococcus pyogenes* var. *aureus,* in 10.5 per cent; (5) *Staphylococcus pyogenes* var. *albus,* in 7 per cent; (6) *Streptococcus equisimilis,* in 7 per cent; (7) *Escherichia coli,* in 5.3 per cent; *Candida albicans,* in 5.3 per cent; (8) *Streptococcus faecalis,* in 3.5 per cent; (9) *Proteus vulgaris,* in 3.5 per cent, and (10) *Corynebacterium pseudodiphtheriticum,* in 3.5 per cent.

In some of the patients, the involved teeth remained quiescent and caused no symptoms; in others, infected root canals were opened and inadequate instrumentation accelerated the bacterial growth. All involved teeth had lost their translucence and were discolored.

Treatment consisted of endodontic therapy; rinsing with a physiologic sodium chloride solution, hydrogen peroxide, alcohol and Formalin; antibiotic therapy with penicillin, streptomycin, bacitracin, oxytetracycline and nystatin (topically applied) administered either separately or in combinations. In the last sitting (usually the fourth) the root canal treatment was completed. Success was obtained in 89.5 per cent of the 58 patients treated.

Second Dental Clinic of the University of Prague, Czechoslovakia

Periodontics

Fluorescence microscopy of healing gingival epithelium: preliminary report

William D. McHugh and Per-Allan Persson. *Acta odont.scandinav.* 16:205-218 Aug. 1958

Fluorescence microscopy was used in an investigation of the healing gingival epithelium after experimental gingivectomy in dogs. A number of fluorchromes (weak, watery solutions of certain dyes used to stain tissues to give them a high degree of fluorescence) were tested to find a combination giving good differentiation between the various gingival tissues and between epithelial cells of different ages. Congo red with primulin and acridine orange at pH 5 proved to be satisfactory.

Four stages in the healing of the gingival epithelium can be observed, as follows:

1. Stage one is seen during the first two or three days after operation when cells from the deeper layers of the epithelial edge of the lesion slide out into the blood clot.

2. Stage two commences about four days after operation. Proliferation of the deeper layers of the epithelium a little distance from the edge of the lesion commences and rapidly forms a large "peg" process which extends down into the connective tissue. Serial sections show that similar processes are produced around the periphery of the wound. The "peg" formation acts as a "factory," producing large numbers of young epithelial cells which stream out from the pegs to the healing edge. Here they "bubble up" to the surface, some passing back over the old epithelium but most sliding over the granulating surface to cover the lesion with layers of epithelial cells.

3. The third stage is seen after nine days when fine epithelial processes are produced by proliferation of the deeper layers of the new epithelium. These processes extend down into the superficial layers of granulation tissue.

4. In some instances, a fourth stage is observed in the epithelium adjacent to the tooth. Extensive thick downgrowths of epithelium, often with degeneration of the cells in the center, are seen.

Where epithelium grows down next to the tooth, the cells adjacent to the hard substance of the tooth do not become keratinized but undergo some form of degeneration.

School of Dental Surgery, The Medical School, Birmingham 15, England

Histochemical changes in inflammatory periodontal disease

S. Sigmund Stahl, Henry C. Sandler and E. Suben. *J.Periodont.* 29:183-191 July 1958

The histologic changes occurring in periodontal disease have been described primarily as processes of chronic inflammation, degeneration and repair of local tissue. This investigation was concerned with some of the histochemical changes that occur in chronic inflammatory periodontal disease. Serial sections of 30 human teeth and their supporting structures were subjected to various histochemical analyses.

In most regions of gingival inflammation, pronounced fuchsinophilic aggregates could be observed after staining with the periodic acid-Schiff and allochrome procedures. These aggregates stained orthochromatically and sometimes beta-metachromatically and showed partial hyaluronic acid lability. An increase of argyrophilic fibers also was observed in the region of inflammation.

In many regions of narrowing and crushing of the periodontal membrane, probably due to excessive occlusal stresses, fuchsinophilic material could be visualized.

Regions of alveolar bone resorption were characterized by the presence of fuchsinophilic staining material in the ground substance. A lessened fuchsinophilia of the ground substance in regions of osteogenesis was observed.

The response to injury and repair found in chronic inflammatory periodontal disease seemed to be characterized histochemically by an increase in the visualization of mucopolysaccharides

and an associated increase in reticulum fibers. The visualized mucopolysaccharides are likely to be composed of mucoproteins and hyaluronic acid.

The bibliography contains 52 references.

Veterans Administration Hospital, Brooklyn, N.Y.

Nutritional status of selected adolescent children: III. Ascorbic acid nutriture assessed by serum level and subclinical symptoms in relation to daily intake

Margaret McGregor Hard, Nettie C. Esselbaugh and Elizabeth A. Donald. *Am.J.Clin.Nutrit.* 6.401-408 July-Aug. 1958

Although adolescence is a period of great physiologic stress, this period has received comparatively little attention from the viewpoint of basic nutritional information.

In the course of a comprehensive study of 248 selected adolescent boys and girls in two areas of the State of Washington, information was obtained pertaining to ascorbic acid status. Dietary intake, serum ascorbic acid, biomicroscopic examination of the gingivae and of the epithelium of the upper arm, colored photography of the gingivae, and physical examination of the gingivae and of the skin of the upper arm were the indices available for the evaluation of ascorbic acid nutrition. Correlations between food intake, serum ascorbic acid levels, and physical manifestations of ascorbic acid deficiency were studied.

The gingivae were examined with the aid of a Bausch and Lomb Poser slit lamp. Hyperemia, swelling, infiltration, pitting, recession of the interdental papillae and recession at the gingival margin were noted. The gingivae of each subject were photographed, using a Leica camera with a 135 mm. telephoto lens, Kodachrome A film, 81C Rattan filter, and no. 6 G.E. flash bulb. Each slide was evaluated for the gingival condition it depicted.

Daily mean intakes of ascorbic acid and standard error of the means were obtained for both boys and girls from Snohomish and Yakima Counties. By present standards, the ascorbic acid food intake of all boys and of the Yakima girls was low. Mean daily intakes were 82 mg. for the boys and 69 mg. for the girls. Fourteen of the 248 subjects took vitamin C supplements.

The mean serum ascorbic acid values were rated "fair" to "good." The values for Snohomish boys and girls were 0.64 ± 0.04 and 0.86 ± 0.06 mg. per cent, respectively, and for the Yakima boys and girls, 0.70 ± 0.06 and 0.72 ± 0.06 mg. per cent, respectively. A significant difference existed between the sexes in relation to serum ascorbic acid values.

The average scores for the biomicroscopic observations of the upper arm and the gingival epithelial lesions indicated a "slight" deficiency of ascorbic acid. The evaluation of the Kodachrome slides of the gingivae suggested a "fair" status of ascorbic acid nutrition. The physical examination revealed few subclinical manifestations.

There was a greater incidence of chronic than of acute gingival lesions. Except for hyperemia of the arm and infiltration of the gingiva, a greater percentage of the girls than of the boys were "normal."

The lack of correlation between dietary intake, blood values and biomiscroscopic observations of the gingivae and of the epithelium of the upper arm is in agreement with the theory proposed by Kruse (1942). Serum ascorbic acid values fluctuate with current intake whereas the state of body tissues probably reflects the nutritional status of an individual over a period of years.

On the basis of the several criteria used, selected Washington adolescent subjects were in a fairly good state of ascorbic acid nutrition.

11 East Thirty-sixth Street, New York 16, N.Y.

Physiology

Formation and malformation of the human skull

Carl Krauspe. *Med.Klin.* 53:568-578
April 4, 1958

The skull of modern man is the product of an extremely complicated ontogenic and phylogenic development.

The maxillofacial and cranial parts of the skull reflect the specific characteristics of the individual man, woman or child. These parts, therefore, rank among the favorite subjects in comparative anatomy, morphology and physiognomy.

Malformations of the human skull, especially disharmony between the form of the skull, the volume of the brain and the resulting disturbances of the sense organs, are of clinical significance for various branches of medicine and dentistry.

The systematic classification of skull malformations is difficult because the "classic" dysostoses, especially craniofacial and mandibulofacial dysostosis which are mentioned most frequently in textbooks, are not entities but syndromes.

Osteogenesis imperfecta (prenatal and postnatal type) is a defect in bone formation and calcification of unknown origin, often hereditary or familial. Achondroplasia begins early in the intrauterine life as disturbed chondrification and ossification and leads to dwarfism. Hydrocephaly designates an increase in the volume of cerebrospinal fluid within the skull leading to distention of the ventricular system because the cerebrospinal fluid can neither escape into the subarachnoid space nor be absorbed by the venous system. Craniostenosis, the premature closing of the cranial sutures, results in a decrease in skull dimensions but is not related to dwarfism. Other malformations are: (1) oxycephaly (conical skull form); (2) acrocephaly (pointed skull form); (3) scaphocephaly (bulging occiput and forehead), and (4) hypertelorism.

Malformations of the human skull frequently are associated with facial clefts such as cleft lip, cleft jaw or cleft palate.

Prior to treatment an exact analysis of the skull deformity is necessary to determine whether endogenous or exogenous factors caused the malformation. The correct evaluation of the causative factor or factors (at the earliest possible stage) is a prerequisite for successful surgical repair.

Cephalometry and craniometry have been used more and more frequently in efforts to study growth and development of the human skull under normal and abnormal conditions and to analyze the disharmonies in the developing or developed pattern. The complexity of the human skull, in a phylogenic, ontogenic and functional view, is the main reason for the long delay in acquiring a fairly clear picture of the intricate changes in the different parts of the skull which occur during normal and abnormal development. The fact that the bony capsule of the brain is linked with the maxillofacial skeleton, so that these two parts are united in one anatomic and biologic unit, accounts for many complications. These two parts not only follow different developmental patterns but the timing of their growth rates also is entirely divergent.

Pathological Institute of the University of Hamburg, Martinistrasse 52, Hamburg, Germany

1 *Formation and malformation of head and face. Drawing by Albrecht Dürer (1471–1528)*

2 *Comparative physiognomy (man and sheep). Etching by Giacomo della Porta (1551–1604)*

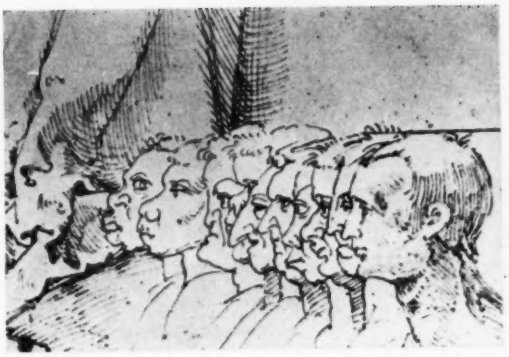
3 *Chondrodystrophic hydrocephaly*

4 *Osteogenesis imperfecta*

5 *Oxycephaly*

6 *Acrocephaly*

7 *Internal congenital hydrocephaly*



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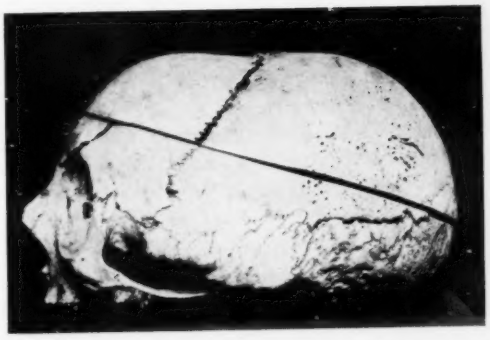

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Physiologic migration of anterior teeth

Bernard Schneider and Harry Sicher.
Angle Orthodont. 28:166-175 July 1958

A study was undertaken in an attempt to determine whether a drift pattern of teeth existed labiolingually. Because it was thought that single-rooted teeth would provide a clearer picture, the study was limited to the upper and lower anterior teeth from cuspid to cuspid. The material consisted of 48 human teeth and their supporting tissues, sectioned labiolingually. The slides chosen were central sections which passed through the complete length of the teeth from apex to incisal edge whenever possible. The 48 teeth were taken from 29 male cadavers.

A study of the resting lines in the alveolar bone by means of microprojection allowed the reconstruction of a concise, accurate picture of the movement of teeth.

The direction of movement was varied. Of 24 teeth showing some change in a lingual direction, 16 revealed a lingual tilt and 8 a lingual translatory drift. Of 10 teeth showing a change in the labial direction, 3 showed a labial tilt and seven a labial translatory drift. Of 19 teeth showing vertical eruption, 10 had erupted in combination with a labial or lingual movement and 9 showed vertical eruption alone. Six teeth appeared entirely at rest.

Of the 48 teeth studied, 29 were maxillary and 19 were mandibular. Of the 29 upper teeth, 11 showed a lingual movement, 9 a labial movement, 12 a vertical eruption and 3 were at rest. Of the 19 lower teeth, 13 moved lingually, 7 showed vertical eruption, 3 were at rest and only 1 tooth had moved labially.

When the sample was arranged in such a manner as to determine the effect of tooth position within the jaw, no definite pattern of behavior existed; central and lateral incisors as well as cuspids were shown to move in either a labial or lingual direction.

There were 12 individuals from whom two or more teeth were derived. Of these, the teeth behaved similarly in five individuals whereas in seven individuals they did not.

No pattern of behavior could be ascertained in antagonistic teeth. The effect of attrition on the drift pattern revealed no definite tendency. Resting teeth from the same individual seemed to exhibit a strong tendency to behave similarly. This probably reflects a state of equilibrium in the individual's dentition.

The increase in alveolar bone loss of upper teeth seemed to promote a labial movement of the upper teeth.

There seemed to be a correlation between the degree of loss of teeth and the drift tendencies of the teeth. When the teeth were arranged in the order of increased loss of teeth of their respective jaws, the tendency of the labial movement of teeth seemed to increase.

The present study, although conclusive as to the difference in behavior of maxillary and mandibular teeth, is hampered by the nature of the sample. Further study is required to determine whether these differences would be equally apparent in a sample taken from complete dentitions.

808 South Wood Street, Chicago, Ill.

Oral surgery

New method for reduction of acute dislocation of the temporomandibular articulations

W. Basil Johnson. *J.Oral Surg.* 16:501-504 Nov. 1958

A new method for the painless reduction of acute, bilateral dislocations of the temporomandibular articulations has been developed. In the past three years the method has been used successfully to reduce 17 such dislocations. All these joints had been dislocated for a period varying from 15 minutes to 3 days. Ten of the patients were referred with histories of unsuccessful attempts of reduction with manual manipulation and traction.

The preauricular area of the face is prepared with an accepted skin antiseptic. Either the right or left preauricular area may be used as the site of injection; it is necessary only to inject the local anesthetic unilaterally even though the dislocation may be bilateral.

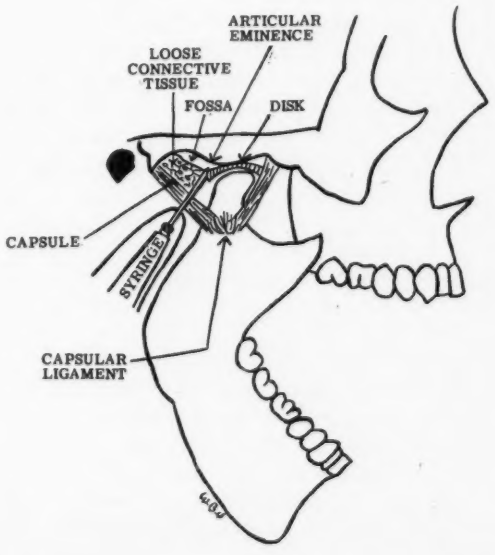
The gloved index finger palpates the depression of the glenoid fossa, which is easily accomplished as the heads of the condyloid process are locked anterior to the eminences in the articular plane. A 1.8 cc. Carpule of lidocaine hydrochloride is loaded into the breech of a syringe equipped with a 25 gauge, 1⅝ inch needle. The needle is inserted into the subcutaneous tissues of the depression of the glenoid fossa, as the needle is directed inward and slightly anterior toward the head of the condyloid process. The anesthetic solution is injected slowly as the needle progresses into the tissues. When the posterior slope of the eminence or the head of the condyloid process is contacted, the needle is slightly withdrawn and the remaining anesthetizing solution is injected into the tissues surrounding the glenoid fossa (illustration). The needle then is withdrawn.

In all 17 patients, the dislocations were reduced spontaneously without manual manipulation in about one minute.

Injection of the local anesthetic causes the nerve impulses to the mandibular musculature to be arrested. Relaxation of the muscles of mastication occurs, and the dislocation of the temporomandibular joint is self-reducing.

Since the local anesthetic need be injected only unilaterally, it is apparent that there must be a synergistic action of the muscles of mastication bilaterally. If one set of the muscles is relaxed by means of local anesthesia, the opposite set becomes relaxed without anesthetic interference.

U.S. Naval Hospital, Great Lakes, Ill.



Relationship of condyle to articular eminence in acute, anterior dislocation. Note stretching of capsule, capsular ligament, and nerve bearing loose connective tissue and attachment of this tissue to the disk. Also note needle direction and approximate site of deposition of local anesthetic

The role of environmental factors in the etiology of 'so-called' congenital malformations

Beverly Douglas. *Plast.& Reconstr.Surg.* 22:94-108 Aug. 1958 22:214-229 Sept. 1958

In September 1938 a 2.5 month old patient came into the care of the author. She had a small cleft in front of the right ear; a unilateral right-sided complete prealveolar cleft lip; a unilateral complete cleft of the gingiva and a complete postalveolar cleft palate. The patient was one of twins whom subsequent research proved to be identical. The author's conviction after seeing these identical twins, one only having a deformity, that some other cause than a purely genetic one must be responsible for the abnormalities, has not changed.

McEvitt (1952) admits the possibility of other causes than hereditary ones for deformities. Proof that deformities in the human fetus are not necessarily or entirely due to hereditary factors is a great step forward, since it will clear the air for a more intensive study of extragenital or environmental factors which may affect the fetus during the first trimester, whether these be due to mechanical causes, maternal infections, hormonal disturbances or dietary deficiencies.

When Warkany and others showed that cleft palate and other deformities could be produced in rats by deficient diets, the author first began to give pregnant mothers who had had one child with cleft palate or other deformity a rich diet. About 1942, when Warkany and others showed that the same deformities could be produced in rats by diets deficient in riboflavin, greater quantities of riboflavin were added to the diets of these mothers.

Although the minimum adult daily requirements for most vitamins are established, those for normal women during pregnancy are still largely hypothetical. Until the latter requirements are better evaluated, it appears logical to provide abundant, though not extreme, quantities of these substances to the pregnant mother during the early, critical period of organogenesis, namely, the first 12 weeks. For the past 16 years, every available woman whose first deformed child was treated by the author, and who was willing to cooperate with the obstetrician, has received abundant "compensatory nutrient" substances during the first trimester. The daily supplementation consists of a multiple vitamin and mineral capsule, with a supplementary capsule of vitamins A and B complex, folic acid and pantothenic acid.

The results of this study so far are encouraging in one respect, discouraging in another. Not a single mother so treated has had another deformed child. However, when one considers that cleft palate occurs only once in 950 births generally to 1 in 1,694 (Tennessee, 1950 to 1954), it is seen that the number of patients treated is yet too small to be significant.

Since 1955 an attempt has been made to broaden this study to include two series of several thousand women each, one series to serve as a control.

The author also has begun breeding female rhesus monkeys in an experiment in which the various factors of diet are under control. If dietary deficiency should result in producing deformities in the offspring of primates, this fact would help in closing the gap between the lower animals and man. There is no hereditary strain of deformities in monkeys as in mice, hence the interest in investigating the possibility of using maternal deficiencies in the monkey to produce deformities in the offspring.

515 Medical Arts Bldg., Nashville 5, Tenn.

Use of calf bones in transplantation

Nicholas Georgiade, Robert Woolf, Frederick Richard and Kenneth Pickrell. *New York Times* 58:39 Oct. 14, 1958

Several patients who had received experimental calf-bone transplants were recently re-examined at the Duke University Medical School, Durham, N. C.

If the initial apparent success in these patients continues, the nation's farms and packing plants may prove to be handy and convenient new sources for repair of fractured or diseased human bones.

In several instances, segments of whole calf bone or calf bone ground into a paste have been used as substitutes for shattered or diseased human bones.

The bone paste was used to repair defects in upper and lower jaws caused by surgical removal of cysts; to repair skull defects caused by brain surgery; to repair clefts of the bony tooth sockets and fractures of the jaw.

In one instance, a comparatively large defect in the patient's lower jaw was repaired with a 1½-inch piece of calf jawbone.

Duke University Medical School, Durham, N.C.

Dental extractions in patients undergoing anticoagulant therapy

Irwin Walter Scopp and Harry Fredrics.
Oral Surg.,Oral Med.& Oral Path. 11:470-474 May 1958

Teeth with carious pulp exposures were extracted in two patients undergoing anticoagulant therapy at the Veterans Administration Hospital in New York City. Profound bleeding resulted.

A 38 year old man, receiving 75 mg. of bishydroxycoumarin daily, had his maxillary left third molar extracted. A good clot formed 15 minutes after the extraction. Eight hours later, the patient felt pain and fullness about his left eye. Subconjunctival ecchymosis and ecchymotic swelling of the left temporal and infraorbital regions were noted. Despite the application of ice packs and the administration of codeine, the pain persisted and the swelling enlarged. Twelve hours after the extraction, the oozing of blood from the socket was noted. By the fourth day after extraction, the entire left side of the patient's face was disfigured by a massive hematoma. During this period the prothrombin time was maintained at between 31 and 39 seconds (control, 21 to 14 seconds), and the administration of bishydroxycoumarin was continued. On the fourth postoperative day, anticoagulant therapy was stopped, and 75 mg. of menadione sodium bisulfite was injected intramuscularly. The hematoma resolved gradually, and two weeks later anticoagulant therapy was resumed.

In a second case involving a 67 year old man, the findings were similar. Intravenous injection of menadione and a blood transfusion restored prothrombin time to normal.

In patients undergoing prolonged bishydroxycoumarin treatment, extraction of teeth should be attempted only after bishydroxycoumarin has been withheld until prothrombin time has returned to at least the upper limits of the normal range. When hemostasis is certain, the anticoagulant therapy may be resumed. During the period of dental treatment of patients on anticoagulant therapy, the physician cooperates and participates in the management of the patient. The dentist does not undertake to withhold anticoagulant therapy from the patient without prior consultation with the patient's physician.

Veterans Administration Hospital, New York, N.Y.

Fracture dislocations of the mandibular condyle in children

Leopold Dessner and Olov Fr. Holm.
Svensk tandläk.Tskr. 51:57-68 Feb. 1958

Conservatively treated fracture dislocations of the mandibular condyle in six children were followed up for from one to six years after treatment was finished. These were the findings:

1. The conservative orthopedic treatment had resulted in complete functional healing in all six children.

2. Complete anatomic healing, with remodeling of the dislocated condyles, had occurred in five children. In the sixth, roentgenographic examination revealed a hypoplastic condyle, though with normal relations to the glenoid fossa and with normal mobility. This patient, a boy of 14 years, was the oldest patient.

3. In none of the six patients could bite or jaw deformities be detected.

4. Though the material is limited, the results are unequivocal. In fractures of the mandibular condyle in children, even with gross displacement, conservative orthopedic treatment is the method of choice. The prognosis seems to be favorable.

Länslasarettet, Falköping, Sweden

Pathology

Unilateral impairment of taste sensation after mandibular anesthesia

Bent Krarup. *Tandlaegebl.* 62:313-316 May 1958

Three persons with a unilateral reduction in the ability to differentiate between taste sensations were observed at the Clinic of Otorhinolaryngology of the State Hospital in Copenhagen, Denmark.

The unilateral impairment of taste sensation had followed local anesthetization of the inferior alveolar nerve prior to multiple tooth extractions. Obviously, the chorda tympani nerve, which regulates the sensation of taste, was injured accidentally.

The degree of taste impairment in the three patients, as well as the relative grade of the ability to distinguish between various taste sensation in 140 normal persons serving as controls, was investigated. A recently developed gustometric apparatus, "Elgustometer," was used to evaluate the effects of gradually increased doses of various gustatory solutions administered in intervals.

The Elgustometer produces values from 5.75 to 300 microamperes which are distributed over a stimulus field divided into 37 electrogustatory units. The lowest values recorded designate the highest grade of ability to recognize taste variations.

Although the threshold of taste varied greatly among normal persons, there was hardly any difference in taste sensations perceived at the right or left side of the mouth in the same person. A difference of more than three electrogustatory units must be considered as a pathological symptom. In the three patients, however, even after six months, there existed a difference of 27 electrogustatory units between the right side (normal) and the left side (impaired).

Among the control persons were 14 (10 per cent) who had a unilateral impairment of the sense of taste without realizing this fact or knowing its cause.

Oto-laryngologisk Afdeling, Rigshospitalet, Copenhagen, Denmark

Schwannoma of the tongue and arteriovenous aneurysm of the lip

M. Dechaume, J. Payen and F. Garlopeau. *Actual.odontostomat.,Paris* 11:7-13 March 1958

The comparatively small neurogenic tumors sometimes appearing in the oral cavity, especially on the mucous membrane of the lips or the tongue, are difficult to diagnose because they have various atypical characteristics. In most instances, a pathoanatomical examination is indispensable for accurate diagnosis.

Case 1. Schwannoma (neurinoma). An 11 year old French girl was admitted to the Dental Clinic of the University of Paris for treatment of a small neoplastic growth on the posterior third of the tongue. The tumor, the size and shape of a pea, appeared firm to the touch. Its surface was dark yellow.

Roentgenographic examination showed no osteolysis but opacity and a partial destruction of the mucous membrane. Microscopic examination revealed the presence of spindle-shaped cells arranged in long bundles. The nuclei also were spindle-shaped.

Pathoanatomical examination furnished the basis for correct diagnosis: benign neoplasm of the white substance of Schwann, schwannoma.

Case 2. Arteriovenous aneurysm. A 17 year old Canadian girl was referred by her dentist to the clinic for diagnosis and treatment of a tumorlike growth on the upper lip. According to the patient, the tumor had been observed eight years prior to the clinical examination. The patient and her family associated the development of the neoplastic growth with a severe fall which had caused serious laceration of the face and multiple injuries of both lips. The growth became visible almost immediately afterward, and produced sudden attacks of boring pain.

At the time of examination, the tumor had a diameter of about 1 cm. It extended to the inner edge of the upper lip and was comparatively soft to the touch.

Microscopic examination revealed the presence of an obviously long-standing degenerative process, a gradually increasing thrombosis and the formation of a secondary fibrous inner coat encapsulating the benign tumor. The wall of an artery was enlarged and mucoid degeneration was found in an adjacent vein. There was no evidence of a cystic change.

Pathoanatomical examination revealed the presence of a blood-containing tumor which pulsated with each systole, obviously an arteriovenous aneurysm. There was no evidence of syphilis, the most common cause of aneurysm.

In both instances, the benign tumors were excised. The prognosis was favorable. The healing period was uneventful and was followed by complete recovery.

Clinique Stomatologique à la Faculté de Médecine, Paris, France

Turner teeth: a case of two prematurely erupted premolars

Einar Hals and Märta Olow. *Odont.Tskr.* 66:199-212 June 1958 [in English]

Two prematurely erupted Turner teeth were seen in a six year old girl. The teeth, the mandibular second bicuspids, were much smaller than normal, lacked the typical bicuspid appearance, and showed enamel hypoplasia. The roots had thin walls and the pulp cavity opened wide at the base of the root. The deciduous predecessors had been extracted 18 months earlier because of toothache.

On histologic examination, each tooth revealed pronounced hypomineralization and hypoplasia in a localized area of the enamel. In one of the teeth, most of the enamel surface was covered by a homogeneous cuticle to which degenerated cells from the enamel organ were attached. In some areas the membrane contained nuclear rests. Small remains of a similar membrane also were seen on the other tooth where the greater part of the membrane obviously was lost during preparation of the ground section. The membrane has been identified as the "horny epithelial hyaline-like membrane" or secondary enamel cuticle (Bauer, 1943). No primary cuticle and no reparative covering of cementum on the enamel surface could be detected.

The dentin in one of the teeth showed pronounced pathological conditions, some of which were considered the direct effect of the periapical inflammation in connection with the deciduous predecessor. The pathological conditions included: (1) indentations in the cervical area of the root surface, representing a horizontal constriction; (2) channels in the dentin, starting in these indentations, following the course of the dentinal tubules, and being bordered by interglobular dentin; (3) wider channels, traversing the course of the tubules, and (4) peripheral layers of atypical nontubulated dentin, subjacent to these indentations.

In the apical region of the dentin, numerous cell inclusions were seen, obviously caused by the premature eruption. The diminutive size of the teeth is ascribed mainly to the premature eruption. In addition, the inflammation may have inhibited formation of the cervical enamel and the root dentin.

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Changes in tooth structure and color in children with erythroblastosis

S. Ritter. *Zahnärztl.Welt & Reform* 59:273-277 May 25, 1958

Erythroblastosis occurs mainly in children of Armenian, Greek, Italian and Sicilian parentage but has been observed, although sporadically, in children of other nationalities. Erythroblastosis is a familial disease in which an increased number of erythrocytes and erythroblasts are found in the blood. Three types can be distinguished: (1) anemia neonatorum, the mildest form; (2) icterus gravis neonatorum which always is associated with the Rh factor, and (3) hydrops fetalis due to an iso-immunization of an Rh negative mother with the Rh positive fetal blood. In each of these three disease types there exists hyperactivity of the bone marrow.

Changes in structure and color of teeth may

occur in the early stages but they are always present in the advanced stages.

Thirty-six children with erythroblastosis were studied at the Dental School of the University of Mainz, Germany. The teeth of only 11 children had normal color; those of the other 25 children were green, grayish-green, yellowish-green, yellowish-gray, dark yellow, cream-beige or black. Mainly the anterior teeth were discolored but changes in color occurred in isolated posterior teeth.

Microscopic examination showed severe hypoplasia of the tooth structures in seven children, involving mainly the deciduous molars. In one instance, the lower cuspids, and in another, the lower left lateral incisor, showed an incomplete structural development. Other structural defects observed were diastema, cross bite and deep overbite. These defects, however, cannot be considered as sequelae of erythroblastosis because they were caused by other factors, mainly thumb-sucking.

Roentgenographic examination of the jaws revealed the presence of osteoporosis of the spongiosa, resulting in a "salt-and-pepper" appearance. In the upper jaws, similar pathologic changes had taken place with compensatory lamellar striations. Carious lesions were present mostly in the first molars.

Roentgenograms of the skull showed extensive medullar thickenings of the cranial bones. The upper jaw and the malar bones were enlarged, and the maxillary sinuses seemed obliterated.

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Complications of Candida albicans in infancy

J. M. Wagner and I. Kessel. *Brit.M.J.* No. 5092:362-366 Aug. 9, 1958

Thrush was first described in 1764 by Rosen von Rosenstein, who mentioned a disease of the mouth which was more severe if it spread into the lungs. Four cases of thrush esophagitis in infants are reported; two of the patients died.

Candida albicans may be found in the normal oral flora, especially in older children and adults. In the newborn and infants, where the oral pH is high, *C.albicans* usually is introduced from the exterior and causes disease. There is an increased incidence of such disease in the children of mothers suffering from vaginal moniliasis.

Oral thrush, which in itself can be a severe disease interfering seriously with nutrition, can spread (1) to the gastrointestinal tract, especially the esophagus; (2) to the lungs, and (3) throughout the whole body.

The syndrome described in the four case reports represents definite symptoms, whether it has been caused by spread to the esophagus or by an incoordination of swallowing associated with thrush of the posterior pharynx, leading to inhalation of food particles and aspiration bronchopneumonia. This syndrome occurs if an infant with oral thrush shows toxic reactions, becomes dehydrated, has difficulty in swallowing, and chokes during feeding and develops cyanosis. Within a short period, a severe bronchopneumonia develops, and without active treatment death may follow. To substantiate the diagnosis, roentgenograms of the chest will show pronounced bronchopneumonia, and a Lipiodol-swallow examination will show an incoordination of swallowing either at the upper or lower end of the esophagus.

In most instances of moniliasis in children, local measures will suffice. These consist of gentle handling so as not to traumatize the mucosa, and swabbing with at most three daily applications of 1 per cent methylrosaniline chloride (gentian violet) solution. If this is ineffective, drug therapy should be started. Nystatin, in doses varying from 50,000 units four times daily in the newborn to 500,000 units in adults, has proved a powerful antimonilial weapon. Hydroxystilbamidine isethionate was found useful by Wolff and others (1955) in two instances of thrush esophagitis. The suggested dosage is 5 mg. per kilogram given each 12 hours for from four to six days. Brilliant green has been used with success locally, intravenously, and by aerosol in instances of pneumonia. The suggested dosage for intravenous use is 0.16 to 0.5 mg. per kilogram body weight daily. Potassium iodide has been used effectively in many instances, but usually in conjunction with other drugs.

Additional and supportive therapy varies according to the complications present. Difficulties

of feeding are obvious in instances of thrush, as is the need for oxygen in pneumonia. In severe instances of the disease, all oral feeding must be stopped to prevent fatal inhalation pneumonia. Intravenous therapy must be continued until a Lipiodol-swallow examination shows that the infant is able to swallow properly.

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Foci of infection in the deciduous dentition of the school children of the City of Pécs, Hungary

Paul Oravecs. *Deut.zahnärztl.Zschr.* 13:126-132 Feb. 1, 1958

During the last few years the controversies between the dental and the medical profession in regard to dental focal infection have subsided. Today, it is possible to examine the problem from an unemotional point of view and to evaluate the role played by dental foci in general health.

At the Dental School of the University of Pécs, 10,000 school children underwent routine dental examinations during 1957. In 365 children, it was suspected that changes involving the deciduous dentition had been caused by dental foci. In the majority of children, the permanent dentition appeared free from dental focal infection.

Human skin, the oral mucosa and some of the superficial tissue always harbor a variety of microorganisms, which can be classified into two groups: the resident flora and the transient flora.

The resident oral flora usually consists of comparatively stable species of nonpathogenic bacteria. If the resident flora is disturbed by external or internal influences, it tends to re-establish itself immediately after the source of disturbance is removed.

The transient oral flora consists of nonpathogenic and potentially pathogenic bacteria which are present and active for hours or days but seldom for weeks. Transient microorganisms rarely cause pathologic changes in the oral cavity or in other parts of the human organism if the resident oral flora is intact. If the resident flora is disturbed or reduced, the transient oral flora may take over, proliferate and produce oral or systemic diseases.

In the 365 Hungarian school children in whom the presence of dental foci of infection was suspected, the extraction of deciduous teeth was associated with pathologic changes in the oral cavity and reduction in capillary resistance. In 65 per cent of these children, the foci of infection were concealed, remained in rest position, and were activated by the trauma of tooth extraction.

Preventive treatment consisted of the removal of granulomas, root abscesses and gangrenous tissue immediately after detection. In most instances, endodontic treatment appeared to be not only a hopeless and time-consuming procedure but contraindicated. The danger of introducing large numbers of transient bacteria into the blood stream cannot be overemphasized.

The evaluation of the observations proves the significant role dental foci of infection play in causing gangrenous lesions in deciduous teeth of children who are free from systemic diseases. Microorganisms of the transcient oral flora, present in a dental focus of infection such as a root abscess, can induce hypersensitivity reactions which might cause oral or systemic diseases.

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Poliomyelitic paralysis of fifth cranial nerve

Charles McKay. *Irish J.M.Sc.* No. 391:338-340 July 1958

The fifth cranial nerve is rarely affected in poliomyelitis. Three cases are reported in which the muscles of mastication became weak after acute poliomyelitis.

A 33 year old housewife displayed weakness of the deltoid and biceps muscles, was unable to lift her head and to close her mouth because of almost complete paralysis of the masseter and temporalis muscles. She could swallow normally. The patient improved gradually, and four days after the initial examination she could eat a slice of bread, though her mouth still tended to hang open. Treatment consisted of rest and sedation, and physiotherapy after the muscle tenderness had abated. The patient made a good recovery, though there was still slight weakness of the muscles of mastication, which persisted for another

six months. All teeth were extracted and the patient was fitted with upper and lower complete dentures. She has no difficulty in chewing hard food.

A 54 month old boy had acute poliomyelitis affecting the right fifth cranial nerve and left fifth, seventh, tenth, eleventh and twelfth cranial nerves. The patient had slight facial weakness, had difficulty in swallowing, and tended to choke. The soft palate lifted in the midline, and the tongue protruded slightly to the left. The left side of the face was paralyzed, with pronounced weakness of the muscles of mastication. The patient improved steadily in the next ten weeks, but there still was weakness of the left side of the face, with diminution of biting strength on that side. Four years later, the masticatory muscles remained affected. All chewing was done on the right side, and lateral movements of the jaw were affected. Development of the mandible appeared normal.

A 30 year old man, stricken with poliomyelitis, became unable to swallow and had facial weakness on the right side. The condition gradually improved. Galvanism was applied to the facial muscles, and the biting strength slowly improved. The use of chewing gum as a muscle exerciser brought about gradual improvement.

Weakness of the muscles of mastication, resulting from poliomyelitis, can be overcome considerably by physiotherapy involving active and passive movements and by galvanic stimulation. Improvement may continue until up to about two years from the onset of the disease. The dentist's advice can be of value when weakness of the muscles of mastication has been confirmed. The dentist can improve oral hygiene and can suggest muscle exercises or oral appliances which may assist in restoring muscle function.

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Osteomyelitis of the upper jaw in infants

J. P. Taillens. *Pract.otorhinolaryng.,Basel* 20:104-109 May 1958 [in French]

Only 80 case reports of osteomyelitis of the upper jaw in newborn children have appeared in the literature.

In four infants, osteomyelitis caused by *Staphylococcus pyogenes* var. *aureus* was observed and treated at the otorhinolaryngologic clinic of the University of Lausanne, Switzerland.

The clinical symptoms were sudden onset accompanied by severe constitutional reactions such as high temperature, rapid pulse, vomiting, delirium, localized pain and extreme exhaustion. Purple-red swellings appeared on the mucosa of the upper jaw, spreading to the entire maxillofacial region. Edema of the palate and the alveolus appeared and there were small fistulas discharging pus.

In all four instances, the family history was noncontributory as to the cause. The mothers were well throughout pregnancy, and delivery was normal. The birth weight varied from 3 kg. to 4.5 kg. Erythrocytic count varied from 4,200,000 to 5,350,000; hemoglobin level was between 82 and 86 per cent; leukocytic count varied from 15,000 to 15,600 of which the polymorphonuclear leukocytes were about 56 per cent, lymphocytes about 36 per cent, monocytes 4 per cent, rods 3 per cent and eosinophils 1 per cent. The Hinton test was negative. Cultures taken from the eye sockets showed no gonococci, but the cultures of pus from the oral cavity revealed the presence of *Staph. pyogenes* var *aureus*. Roentgenographic examination of the head was essentially negative and showed no erosion or destructive processes.

The four patients were treated for from 27 to 32 days with penicillin, 160,000 units daily, supplemented by comparatively small doses of sulfadiazine to prevent overgrowth of the gram-negative microorganisms.

After the third hospital week, sequestrotomy was performed with removal of from two to four deciduous tooth buds in the most affected region of the upper jaw. After this intervention, an uneventful recovery followed in three instances.

Universitäts Hals- Nase- und Ohrenklinik, Lausanne, Switzerland

Chronic sialadenitis

H. Allen King and Theodore A. Koerner. *J.A.M.A.* 167:1813-1817 Aug. 9, 1958

Chronic sialadenitis is an insidious, nonspecific, inflammatory disease of one or more salivary

glands, manifested by intermittent swelling, and tending to progress, unless arrested, to form unsightly, fibrous tumors. Four case reports illustrate the insidious onset, slowly progressive course and ultimate indication for surgery.

The four patients were all over 40 years old. The first patient had severe periodontal disease, a tooth with a nonvital pulp and multiple periapical abscesses. The second patient had been edentulous for 15 years, but had recently received an injury to the jaw and reported great discomfort on wearing his dentures. The third patient had poor, carious teeth, periapical abscesses and severe periodontitis. The fourth patient reported considerable past difficulty with dental caries, and had lost most of his teeth; two broken teeth and roots from seven others previously destroyed remained. Periapical abscesses and severe periodontal disease were found. The submandibular glands and ducts were affected in all four patients, and sialoliths were found in three. The patients complained most of the difficulty in swallowing and the unsightliness of the fibrotic swellings.

This disease, recognizable at onset, usually subsides on accomplishment of early and sustained drainage, frequently by the mere removal of a ductal stone. Unless the underlying cause, generally oral infection, is eliminated, recurrence and progression may be anticipated. The resulting fibrous tumors, indistinguishable from neoplasms, must be excised and the dental abnormalities corrected.

Veterans Administration Hospital, Shreveport, La.

Palatal invaginations ("dens in dente") of the second maxillary permanent incisors: preliminary report on a clinical, roentgenological and genetical study

Hans Grahnén, Bengt Lindahl and Karl-Åke Omnell. *Odont.Revy* 9:163-166 April 1958

Invaginations of the teeth (dens in dente, the presence of a toothlike structure within the pulp chamber of a tooth) are of interest clinically because this anomaly often is followed by pulp death and periapical complications. These are due to the fact that, in many instances, there exists a direct communication between the oral cavity and the alveolar bone via the invagination. The diagnosis of dens in dente can be made only roentgenographically.

No genetic studies on dens in dente have been reported. The present investigation was undertaken to determine the frequency of dens in dente in maxillary permanent lateral incisors in a Swedish population, and to discover whether the anomaly is genetically determined.

The frequency of dens in dente in the maxillary permanent lateral incisors was investigated by a roentgenographic examination of 3,020 ten year old school children. The frequency was about 3 per cent, and often the invagination was bilateral.

The genetic study was carried out by examination of the parents and siblings of 42 children (propositi) in whom the anomaly had been found. The frequency of the anomaly in parents and siblings of the propositi was about 38 per cent and 34 per cent, respectively. Statistically there was no significant difference between the sexes. The difference between the frequency of the anomaly in the population and the frequency in the parents and the siblings is statistically significant.

Analysis of nondental characteristics, such as the mother's condition during the pregnancy, the general state of health during the first years of life, trauma, and so forth, did not indicate any connection between these characteristics and dens in dente.

The results indicate that dens in dente of the maxillary permanent lateral incisors is primarily genetically determined. A full report on a larger material will appear later.

Royal Dental School, Malmö S, Sweden

Early detection of malignant tumors in the oral cavity

Halina Hattowska. *Czas.stomat.* 11:122-126 Feb. 1958

In tumors of the oral cavity, radical enucleation followed by chemotherapy or roentgenotherapy is the method of choice.

Malignancy of oral tumors depends on their specific cellular structure and results in the formation of metastases at sites not too remote from the primary tumor, probably by transfer from one surface to another and not through the blood or lymph stream.

The early recognition and treatment of precancerous neoplasms are of vital importance. The dentist is frequently the first to be consulted about lesions in the mouth. He should be alert to realize that any chronic ulceration may be neoplastic. Patients with such oral conditions should be referred to an oncologist or a cancer institute.

Certain oral tumors bear a clinical resemblance to other tumor types, and in these instances it is possible to make a definite diagnosis only after biopsies. In many instances, delayed recognition of potentially malignant tumors will lead to a fatal outcome due to an already inoperable and too far advanced stage.

If the dental general practitioner suspects a precancerous or malignant swelling, he should not perform the biopsy. The specialist, usually associated with a cancer clinic, prefers to take the tissue specimen and have the histological examination made at the institute's laboratory.

Case reports of more than 100 patients with oral tumors, who were seen at the Oncological Clinic of the University of Warsaw, Poland, revealed that a far higher survival rate (from 20 to 30 per cent) could have been achieved if dental practitioners had been able to recognize precancerous conditions at an early stage.

Cooperation between dentists and tumor surgeons is of paramount significance. There are some dental practitioners, however, who avoid advising patients to consult a medical specialist about an oral condition because they feel that such a suggestion would belittle them in the eyes of their patients. This is a symptom of an "inferiority complex." In the eyes of the patient and his family, such a dentist is less worthy of appreciation if the patient himself or his physician then seeks advice of a cancer specialist.

Dentists should never neglect their obligation to the general welfare of their patients; they must be willing to cooperate.

Poradni Onkologicznej, Uniwersytet w Warszawie, Warsaw, Poland

Gangrenous granuloma in the oral cavity

Michele Lovino and Fabio Fossi. *Atti Soc.med. Bolzano* 6:231-239 March 1958

Two patients with gangrenous granuloma of the oral cavity were observed and treated at the Dental Clinic of the University of Bolzano, Italy. This adds two more instances to the approximately 200 case reports which have so far appeared in the literature.

Although of the entire number of patients, 27 have been reported as cured, even some of these alleged cures must be doubted because the observation time was far too short (under six months).

In both patients treated at the clinic, the manifestations and findings were identical: a few months prior to examination symptoms of an infectionlike involvement of the oral cavity, the nose and the accessory sinuses developed unilaterally. These symptoms became gradually worse; ulcerations spread in depth in the form of a necrosis which, in turn, involved the osseous structures. The condition of the patients deteriorated rapidly.

Pathogenesis and histopathology did not reveal any obvious causative factor.

The first patient reacted well to treatment consisting of antibiotics, radium irradiation, roentgenotherapy, high doses of cortisone and adrenocorticotrophic hormone (ACTH.). No recurrence was observed during the next two years.

The second patient, however, was in an extremely debilitated condition when first seen, and did not respond favorably to treatment, which consisted of the same procedures with the exception of radium irradiation. This patient did not recover.

Biopsy revealed a chronic inflammation of osseous structures in the oral cavity probably due to pyogenic microorganisms. There also was an extended formation of bone abscesses. The reasons for the severity of symptoms in this instance were the massive necrosis of osseous tissue and the continued multiplication of pathologic bacteria, highly resistant to antibiotics, and the escape of their toxic products through the apical foramens. The cells of the gangrenous granuloma exhibited a prominent lymphoid contingent.

Ospedale Civile, Bolzano, Italy

Pedodontics

Quadrant dentistry for children

Theodore F. Ferguson and Harbans L. Bhatia. *J.Den.Children* 25:180-183 Sept. 1958

Quadrant dentistry for children is more expedient, more efficient and more economical than the restoration of one tooth at each sitting. With quadrant dentistry, more can be accomplished because the operation in painless and patient apprehension is replaced by patient confidence and cooperation. A clean operating field, free of saliva and wet debris, results in better dentistry.

If the field of operation contains a quadrant in the mandible, the mandibular nerve supplying this region is blocked, and infiltration anesthesia of the buccal mucosa of the teeth carrying the rubber dam clamp is achieved. Infiltration anesthesia is used for teeth in the maxilla, with the anesthetic injected buccally and lingually.

The following clinical procedure for selecting and placing the rubber dam is suggested:

1. A heavy, dark rubber dam provides added toughness to isolate the tooth more efficiently from its soft tissue, and gives less glare than a light rubber dam.

2. A rubber dam can be marked most efficiently and accurately with a rubber dam stamp (Fig. 1). Holes for all teeth in one quadrant are punched in the dam. The most distal tooth, generally the first permanent molar, carries the rubber dam clamp. The anterior tooth in the quadrant is the central incisor.

3. Either a wing or a wingless rubber dam clamp may be used for the molar. The wingless type is easier to use and is less apt to tear the rubber dam.

4. Lubrication of the dam facilitates placement. Shaving cream is preferable as a lubricant to petroleum jelly or cocoa butter, because the shaving cream dries quickly and holds the dam more securely around the gingiva.

5. After the dam has been lubricated, the clamp is placed on the molar. If the wingless clamp is used, the most distal hole on the punched rubber dam is stretched between the middle fingers, the stretched dam is carried over the clamp bow and released to hug the cervical part of the tooth. If the winged clamp is used, the stretched rubber dam is placed first under one clamp projection, then over the clamp bow and finally under the other clamp projection.

6. After the dam is attached to the last molar, Young's rubber dam frame is attached to the dam, to secure the dam and to facilitate engagement of the remaining teeth within the dam's punched quadrant (Fig. 2).

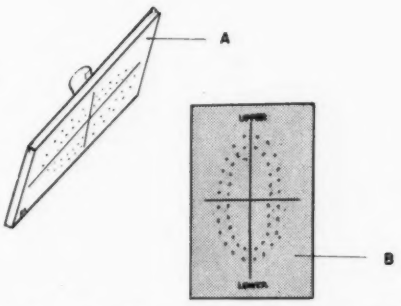

Figure 1 A = rubber dam stamp. B = rubber dam after stamping

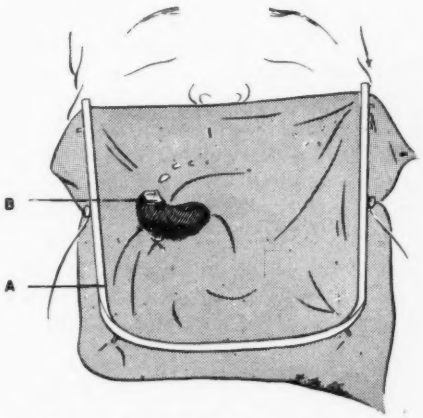

Figure 2 A = Young's rubber dam frame in place. B = upper molar anchorage

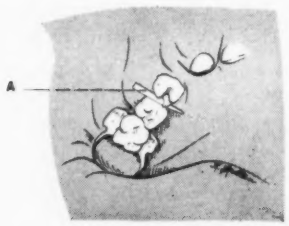

Figure 3 A = wooden wedge in place before preparation of cavity

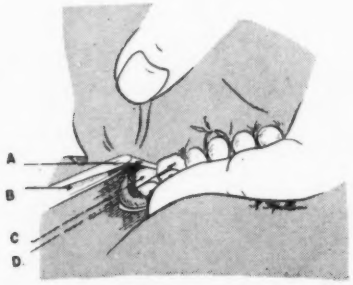

Figure 4 A = wooden wedge. B = hemostat. C and D = matrix bands

7. Teeth anterior to the clamped molar usually are easily engaged by stretching the dam at each interproximal space. Stretching permits the lubricated dam to slip between the contacts of these teeth into the interproximal spaces.

8. The chair is adjusted for the convenience of the operator and patient. The rubber dam is trimmed to free the nasal air passages.

9. A wooden wedge (Fig. 3) is placed cervically between the teeth to be worked on. This reduces the hazard of catching and tearing the rubber dam. One end of the wedge is grasped in a hemostat and the other end is coated with a lubricant. Then the wedge is inserted from the buccal surface into the cervical part of the interproximal space of the carious teeth. The wedge depresses the gingival tissues sufficiently to facilitate accurate preparation of the cervical floor of the cavity.

10. Dislodgement of the matrix holder can be prevented by using a continuous matrix band, prepared by forming a strip of stainless steel banding material (.002 by 3/16 inch) around a prepared tooth. The band is removed, tack welded, and its free ends are cut. The band then is replaced on the tooth. If several compound cavities are prepared, more than one band may be used. With the bands held in place, a wooden wedge again is used; it is inserted between the bands at the gingival margin to obtain perfect gingival adaptation and sufficient tooth separation (Fig. 4).

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The sex difference in tooth calcification

Stanley M. Garn, Arthur B. Lewis, Kalevi Koski and Demarest L. Polacheck. *J.D.Res.* 37:561-567 June 1958

During the years of growth and development, girls are advanced over boys in many respects. Although the direction of sexual dimorphism in the deciduous dentition may be questionable, the fact that girls tend to be earlier in eruption of the permanent teeth is not: for white children of European ancestry, the average sex difference in the time of eruption is 0.45 year (or nearly 5 per cent) with a maximum of 0.93 year (9 per cent) for the mandibular cuspid.

Whether comparable or equivalent sex differences exist in tooth calcification is open to question, and this problem was investigated in detail, in the course of the Fels longitudinal studies of 255 native-born white children from southwestern Ohio.

Sex differences in tooth calcification were investigated in the 255 children, using serial oblique-jaw roentgenograms taken over a period of 18 years. For each child, for the mandibular molars and bicuspids, the age at which each of five stages of calcification and eruption was first noted was recorded.

In general, girls tended to be advanced over boys, in the mean ages at which each of five distinct stages of calcification and eruption was attained. The smallest sex differences were observed early in life, with the absolute divergence between the sexes steadily increasing. On the average, girls were 3 per cent ahead of boys. Al-

though the sex differences observed here were of the same order of magnitude as those existing for tooth eruption (5 per cent), they were considerably smaller than the sex differences in osseous development (10 to 25 per cent).

Since girls were advanced over boys well before the tenth year of life, the sex difference in tooth formation could not be attributed primarily to differences in the timing of sex hormone secretion. These findings indicated the need for sex-specific, quantitative norms for tooth development.

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Chronic thumb sucking in older children

Bert J. Levin. *J.Canad.D.A.* 24:148-150 March 1958

Children between the ages of 7 and 13 who suck their thumbs may be divided into two groups. Those who suck their thumbs only at bedtime, and who will discuss the habit openly, are more easily managed. Those who suck during the day and at bedtime, and who become flustered, upset, begin to stutter or even withdraw from a discussion of their habit are more difficult to manage.

Children in the first group should be given the suggestion that all that is necessary is to find a new, comfortable position for falling asleep. A pair of pajamas is converted to a "snuggle-bunny" to aid in the child's search for this new sleeping position. The snuggle-bunny is made as follows: A slightly oversized, two-piece pair of pajamas is used. The tops are sewn to the bottoms in such a way that the buttons of the tops are placed at the back. The buttonholes are made to fit the buttons tightly. The neck portion of the tops is closed up so that it is only an inch or two larger than the child's neck. The sleeves are sewed across at the arm pits. The pajamas now resemble an infant's sleeping garment.

The use of this device permits all normal movement during sleeping and acts as a reminder to the child to keep the thumb out of the mouth. Success has been experienced with the use of the snuggle-bunny; it may not be removed by the child, and it permits sleep in as normal an environment as possible while a chronic sucking habit is being broken.

During a discussion with the child over his thumbsucking habit, the dentist should ask the child several times whether he wishes to proceed with the remedy even though it may prove difficult. The child's affirmative answer seems to reinforce his desire to cooperate.

The snuggle-bunny is used for one month, after which the child should be supervised closely. Should thumbsucking be noted again, the snuggle-bunny is placed back in use for two more weeks.

Despite repeated promises to cooperate in breaking the thumbsucking habit, some children will tear the snuggle-bunny to get at their thumbs during their sleep. Such children suck their thumbs because an emotional disturbance incites the habit. These children are difficult to manage. They should be seen by a child psychologist or child psychiatrist, who can discover the factors which are maintaining the urge for the thumbsucking habit. When the underlying cause of thumbsucking is discovered, a family effort is made to relieve the child's tensions. If the habit continues, the dentist may now resort to his favorite restrictive appliance.

The dentist must cooperate with child psychologists and psychiatrists; a referral to one of them should be considered as logical a procedure as a recommendation to any other specialist.

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Therapeutics

Blood chemistry and tumor development

E. Leupold. *Chirurg* 29:7-14 Jan. 1958

Recent theories of the etiology of tumors are based on the principle that the parenteral absorption of metabolic products in even the minutest amounts induces profound changes in the chemistry of the blood.

This has been demonstrated by biochemical analysis of cholesterol, lipoid phosphorus and sugar of the blood. The following established ratios are of great significance to diagnosis and treatment of tumors: (1) sugar to phosphorus, and (2) cholesterol to sugar to phosphorus. It has been shown experimentally in rabbits that a drop in the cholesterol-sugar-phosphorus quotient in the blood followed by intracutaneous administration of metabolic products results in tumor development. Conversely, an increase in this quotient results in gradual destruction of tumors. In both the development and the destruction of neoplasms, the rate of change of cholesterol and sugar is extremely important.

Successful treatment results were obtained by an increase in blood sugar. A 40 per cent solution containing from 10 to 30 Gm. of sugar was injected intravenously. To produce the desired rapid change of sugar concentration in the blood, insulin was administered. A lipoid mixture was then injected subcutaneously, producing a wheal. By varying the amounts of sugar and insulin injected, it was possible to produce changes in the ratios of the various systems up to 1,000 per cent.

The percentage alteration in the cholesterol-sugar-phosphorus ratio before and after treatment appeared to be of prognostic significance. In instances in which the final values were lower than the initial values, the prognosis was highly favorable. New growth occurred if the final values were 100 per cent or more higher than the basic values obtained prior to treatment.

Because sugar is the most labile component of the various systems, any change in the sugar values is diagnostically and therapeutically important. During the treatment, therefore, the consumption of sugar in any form must be avoided by the patient. Biopsies and surgical interventions should be shunned because both tend to produce unfavorable changes in the metabolic ratios.

There is a wide variation in the response to the treatment in patients with various tumor types. Some of the tumors disappeared rapidly whereas others required months of treatment. A complete failure in response to treatment was observed in only one patient, a 16 year old boy with an osteochondrosarcoma.

Reichpietschufer 20, Berlin W. 35, Germany

Penicillin resistance

Brit.M.J. No. 5098:753 Sept. 20, 1958

Q.—Is local penicillin treatment in the mouth likely to produce penicillin resistance in bacteria in other parts of the body?

A.—No, nor will it do so in the mouth itself. For the time being sensitive organisms may be suppressed, and any originally resistant ones may multiply in their place, but organisms sensitive to penicillin do not acquire resistance to it as they can to almost any other antibiotic. Resistance even in staphylococci is not acquired, but is a natural property in what once were very few strains; these have been enabled to spread widely by the therapeutic elimination of sensitive strains. That the penicillin sensitivity of other important species of pathogenic bacteria often to be found in the alimentary or respiratory tracts remains unchanged, despite the wholesale use of penicillin for more than ten years in every conceivable way, including that referred to in the question, is proved by the studies of Jones, Feldman and Finland (1957). They compared the sensitivity of hundreds of strains of bacteria isolated in the late 1940's with others isolated recently and found no significant differences. Some of the species studied were *Streptococcus pyogenes, Str. faecalis,* pneumococcus and meningococcus.

British Medical Association, Tavistock Square, London W.C.1, England

Education

Courses in public health dentistry

Chron.WHO 12:314-315 Sept. 1958

After a survey in 1957 by the Pan American Sanitary Bureau, WHO regional office for the Americas, revealed an acute shortage of public health dentists in most Pan American countries, an agreement was concluded between the University of São Paulo in Brazil, the Pan American Sanitary Bureau and the Kellogg Foundation, to provide courses in public health dentistry at the university's school of public health.

The courses are open to students from all Latin American countries. The first course started in February 1958 and was attended by 17 students from eight countries; eight of the students had been awarded PASB/WHO scholarships.

Other agencies are providing guest lecturers to extend the range of the courses. Thus the U.S. International Cooperation Administration adviser to the Brazilian special public health services is teaching technics based on time and motion studies, designed to eliminate wasteful movements in dental practice.

World Health Organization, Palais des Nations, Geneva, Switzerland

The program of training and graduate instruction in dental materials at the National Bureau of Standards

W. T. Sweeney. *J.D.Educ.* 22:217-224 May 1958

The program of graduate training in dental materials was initiated formally in 1947 in the dental research section of the National Bureau of Standards in cooperation with Georgetown University. It is a part of the cooperative research program with the American Dental Association and the federal dental services.

The Bureau has conducted graduate courses in scientific subjects since 1908. The Bureau has a working agreement with Georgetown University under which students take instruction both at the Bureau and at Georgetown University and do thesis work on research projects and receive graduate credit towards a Master's or Doctoral degree conferred by this university. Nine students, all but one of whom are dentists, have received Masters' degrees, and two now are working on Ph.D's.

The graduate student in dental materials has a more complicated training objective than in most scientific disciplines, because he must learn the research technics and methods of several fields of science. His personal contact with researchers in a wide field of physical science in the Bureau, and close association with experienced dental material investigators of the dental group, are stimulating. The program is flexible to meet the ends of the individual "guest worker" in the dental research section.

The student first becomes familiar with the subject of dental materials research in a broad, general way. He receives a personal review of the subject by one or more staff members. The need is emphasized for keeping a true, complete record of his experiments so that he or anyone wishing to evaluate the results will not be handicapped by the absence of essential detail. The student observes the operation of research projects in progress in the laboratory. He acts as an assistant and makes measurements.

Periodic staff meetings and personal discussion usually bring out in the student a desire to concentrate in a specific area or type of research. He undertakes a project mutually acceptable to him and the section, after which he reads to acquaint himself with the specific subject, and works up a bibliography.

During the conduct of his research project, he has the opportunity to take part in oral discussion on other reports in the dental research section and in other parts of the Bureau, and to present the results he has obtained to the staff for suggestions and criticism. When the project is completed, he is encouraged to present it before one of the scientific or dental societies. When the results of the project are considered sufficient to merit publication, he prepares a written report.

The following recommendations on the graduate training in dental materials are presented:

1. The dental school needs a program in research in the field of dental materials as an adjunct to teaching.

2. The science of dental materials should be considered as a basic science course, and should be taught by those with physical science training above that given in the average dental curriculum. This is essential if the standard of teaching in this subject is to be held at a high level.

3. Students should be selected from two groups: (1) the graduate dentist who has an interest in dental materials, and (2) the scientist who has graduated in one of the physical sciences.

4. Students in the first group—primarily dentists specializing in dental materials—will be most successful in teaching the application of the science of dental materials to clinical practice.

5. Students in the second group have the highest potential for graduate work in dental materials, and are best qualified to become the heads of dental materials departments in dental schools or to conduct basic research in the field of dental materials.

Dental Research Section, National Bureau of Standards, Washington, D.C.

Reform of dental and medical education in Germany

Kurt Kolle. *München.med.Wschr.* 100:586-592 April 11, 1958

The provision of skilled dental treatment to the general public cannot be maintained in the future unless sufficient fully trained dentists graduate each year from the dental colleges of the German universities.

The number and quality of dental educators, therefore, are matters of great importance. The abilities required for teaching dentistry are of a special nature—knowledge by itself is not sufficient—and dental students will learn more from teachers who combine the possession of knowledge with the gift of human understanding and the talent of communicating information.

The two major problems facing the German government and university authorities are the provision of additional accommodations for dental education and an appropriate increase in the number of dental educators.

The following proposals and suggestions were made by dental associations and educational organizations:

1. The dental colleges associated with universities should become independent of the medical faculties in regard to their organization, training programs for students who want to become dental general practitioners, and training programs for students who want to become dental specialists.

2. Every dental college should have the right to initiate and maintain its own experimentation and research centers.

3. The constant increase in the annual application of German and other students for dental education necessitates an immediate increase in the number of associate and assistant professors of the dental colleges to be appointed by the university faculty.

4. The resulting enlarged staff of the dental colleges should be directed and controlled by the dean of the dental school and not by the president or administrator of the university.

5. The dental curriculum should be diversified to permit a distinction between the training designed for general dental practice and the training (graduate and postgraduate) designed for specialized dental practice.

6. The immediate raising of the present standards of postgraduate education, especially those for dental specialists, is of major importance.

7. Each dental college, however, must solve by itself the most significant problem in dental education, that is, whether the graduating student should be trained to become a member of a professional "elite" or whether he should obtain an average knowledge and experience of all dental subjects.

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Dentistry around the world

Notes on a visit to Russia

F. J. Ballard. *Brit.D.J.*
105:199-202 Sept. 16, 1958

The author was a member of a five-man British delegation of the Socialist Medical Association which visited Russia to study the health services of the U.S.S.R.

There are two dental courses in the U.S.S.R.—a three-year course for dentists and a five-year course for stomatologists. Most of the three-year dentists are women; they were trained in 27 establishments. After 1960 no candidates for training in this category will be admitted. There are facilities for dentists to take further courses for the higher qualifications, and many have done so, including 70 per cent of those in the Ukraine.

In 1951 the first graduates from a five-year course qualified as stomatologists. There are 15 training institutes for stomatology, with accommodations for 11,000 students. In their first two years, students receive general medical training. In the third, fourth and fifth years, in addition to receiving general clinical training in all branches of medicine, students take three dental subjects: therapeutic stomatology (with children's stomatology), surgical stomatology, and orthopedic stomatology (with orthodontics). All students in the latter part of their training do practical work in each department in urban polyclinics.

Postqualification facilities present refresher courses up to six months in duration, postgraduate courses in specialties, and research.

Prevention is the keynote of all medical services. All school entrants at seven years of age have an examination and all necessary treatment, particularly on eyes and teeth. Polyclinics are an integral part of factory organization. The polyclinic at a ball-bearing plant in Moscow treats a population of 20,000, and has on its staff 75 physicians, including 8 stomatologists. Shopkeepers and other nonfactory personnel are treated at general clinics for which the Minister of Health is directly responsible. Transport workers and members of the armed services have their own medical systems, including hospitals and polyclinics. There is little private practice of medicine and none of dentistry.

Dental treatment is provided free to mothers, to children up to the age of 17 years and to people in hospitals. Prostheses must be paid for at cost. Dental services also are free to war-wounded pensioners, and to most physically disabled persons.

Electrotherapy is widely used in surgery and in treating periodontal disease.

Dentistry is an integral part of the organization and government of medicine. The Union of Medical Workers includes physicians and dentists of all grades, and others engaged in the service of health. Dental technicians generally work in group laboratories.

The incidence of dental caries is high in children of school age, ranging from 40 per cent in the Far North to 95 per cent in Riga. There was little evidence of a standardized technic of dental examination.

In the Ukraine fluoridation experiments on a large scale are in progress. In some areas of the Ukraine the fluoride content of the water reaches 6 to 7 ppm, and mottling of the enamel is prevalent. Experiments with the topical application of sodium fluoride were inconclusive and have been discontinued.

Health education is carried out by an Institute of Public Health, whose funds come by way of a Treasury allocation, from contributions by separate republics, and from the trade unions. Dental health education stresses the value of a good diet and of vitamins B and B_2. Dental health educational posters are displayed in factories, hospitals and polyclinics.

Dentists and physicians are paid alike, from 725 to 1,100 rubles a month, with bonuses for working in remote parts of the country, in mental hospitals and so forth. Additional pay is received after ten years of service, and for night work. Dentists and physicians working in rural areas receive free housing and services. Those with the title "Distinguished Doctor of the Republic" receive 100 rubles a month additional.

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Public health dentistry

Fluoridation in Norway

E. Banaschewsky. *Zahnärztl. Praxis* 9:125
June 1, 1958

During the last session of the Storting, the Norwegian parliament, the Minister of Public Health was asked: "Does the Norwegian government intend to introduce fluoridation as a caries-preventive procedure?"

On February 11, 1958, the Minister answered as follows:

"Research data are available to prove that fluoridation of the drinking water of large regions results in a significant reduction of dental caries. Research in the United States, Sweden, Germany and other countries, dealing with drinking water which contained—either naturally or artificially—flourides has demonstrated that the caries-preventive effect of flouride persisted and that no harmful side effects on children and adults were observed.

"In regions in which the drinking water contains from 1.00 to 1.20 ppm flouride artificially added and in other regions in which a far higher natural flouride content (up to 3.5 ppm) was present, harmful effects, such as claimed by the opponents of fluoridation, did not occur. The Norwegian government is aware that many of the objections to fluoridation have been based on propaganda and not on scientific facts. It is not essential whether fluorine is a poison because the poisoning effect of any element or compound depends solely on the quantity consumed.

"The drinking water of most Norwegian cities, towns and villages is fluoride-poor. It was claimed, however, that the average diet consists of large quantities of fish, and, therefore, contains an adequate amount of fluoride, making the introduction of general fluoridation unnecessary. The fact is that most of the fluoride in fish is found in the bones and the skin, which are seldom consumed.

"Considering the alarming increase of caries in Norwegian children, the government feels that the time has arrived to add fluoride (1.00 ppm) to the drinking water whenever and wherever possible. Fluoridation will be initiated soon, first in cities with waterworks providing a centralized supply.

"The government, however, does not intend to force fluoridation on people who do not want it. This will be a matter of decision of local authorities.

"The government also wants to emphasize that fluoridation is only one of the measures under consideration to prevent or reduce dental caries."

13b München-Gräfelfing, Germany

Study of the use of aqueous methyl red as an indicator of caries activity

George A. Nevitt, Omar M. Seifert,
John C. Greene, Thomas L. Hagan
and Winston D. Bowman. *J. California D.A. & Nevada D.Soc.* 34:395-397
Sept.-Oct. 1958

Preliminary work by Manley and Hardwick (1951) and other investigators indicated that the use of aqueous methyl red might be developed into an accurate and specific indicator of caries activity. An aqueous methyl red solution is a chemical indicator which changes from a yellow color at pH 6 or above to a deep red at pH 4.5. It was hypothesized that the use of such a solution might indicate areas undergoing decalcification.

A controlled, one year study of 217 Las Vegas students 12 to 14 years old failed to show any significant association between methyl red color changes in specific tooth areas and further maturation into clinically apparent dental caries within the one year period. Correlation of the total number of color changes with DMF increment failed to show any association between the number of surfaces with positive reactions to the test and gross caries activity.

U.S. Public Health Service, 441 Federal Office Bldg., San Francisco, Calif.

The new "glycogen theory" of caries etiology

H. Egyedi. *Schweiz.Mschr.Zahnhk.* 60:604-617 July 1958

Normal teeth—deciduous or permanent, human or animal—possess the property to resist the destructive action of acids produced by the bacterial content of the oral cavity or by invading microorganisms. This has been demonstrated frequently and adequately by experimentation with and investigations of the teeth of various species of mammals and of primitive people living on a diet adequate in fat and glycogen to maintain these reserve substances at a physiological level.

The fact that civilized man has failed to maintain identical or similar standards in his diet appears to be one of the symptoms of a gradual cultural degeneration of mankind.

In adults, the dietary disharmony results in a dangerous accumulation of fat at various sites of the body. The consumption of an unbalanced diet by pregnant women influences normal development of the tooth buds in their unborn children, leading to a deterioration in the quality of the deciduous teeth which sometimes is observable immediately after tooth eruption.

From a bacteriological view, the teeth must be regarded as nutrient substrata, with the bacterial plaque as an inoculum on the surfaces. The fate of this inoculum and the course of the bacterial invasion into the enamel depend on whether the nutrient substratum of the enamel will promote or whether it will retard bacterial multiplication.

Even in teeth susceptible to caries, the condition in itself is not always favorable for bacterial growth. Only the co-existence of various factors, mainly the production of acids, primarily in the bacterial plaque and secondarily by diffusion, in the enamel, may create conditions favorable for caries development.

The "glycogen theory," offered by the author as a possible explanation of the causation of caries, is based on the previously unknown but recently established presence of glycogen within the enamel. The principles of this theory can be summarized as follows:

1. Susceptibility to caries develops during the embryonic stages of tooth development.

2. An excess in the formation of glycogen by a diet rich in carbohydrates is accumulated in the matrix of the teeth.

3. Although glycogen itself is a poor nutrient for oral bacteria, under the influence of acids it may turn into glucose which is an excellent nutrient.

4. Caries, therefore, is not acquired by a lack in the diet or a deficiency in tooth structure but by dietary excess.

5. Initial caries, therefore, develops through an invasion of bacteria into the enamel matrix which is saturated with decomposed glycogen (glucose).

6. Glycogen represents as much as 10 per cent and as little as 3 per cent of the organic substance of enamel.

7. Keratin, a scleroprotein which is the main constituent of the organic matrix of the enamel, is in the teeth of civilized man a mixture of keratin and glycogen.

8. Hydrolysis of glycogen is due to continued formation of glycogenase, an enzyme which hydrolyzes the glycogen in the oral cavity to lower saccharides at an optimal pH of from 6 to 6.2.

The theory has been confirmed by experimental demonstrations revealing that a quantitative difference exists between glycogen and glycoprotein contents of enamel and of dentin.

Konigslaan 2, Amsterdam, The Netherlands

Expert committee on water fluoridation: first report

WHO Tech.Rep.Series No. 146 1-25 1958

This report contains the collective views of an international group of experts, the expert committee on water fluoridation of the World Health Organization, which reached the following conclusions:

1. Dental caries is one of the most prevalent and widespread diseases.

2. There is no hope of controlling the disease by present treatment methods alone.

3. Among the numerous preventive methods, the fluoridation of drinking water is the most promising.

4. The effectiveness, safety and practicability

of fluoridation as a caries-preventive measure have been established.

5. Maximum benefits have been shown to result with 1 ppm fluoride, by epidemiologic studies in regions where fluoride occurs naturally in the water, and where fluoride has been added at optimum concentrations.

6. Hundreds of controlled fluoridation programs are now in operation in many countries. Some have been in progress for the past 12 years, so that conclusions are based on experience. No other public health procedure, during the initial stages of its application, has had such a background in time or extent.

7. The biological effects of fluorides have been described in nearly 3,000 clinical and experimental reports in the past 20 years.

8. Fluorides penetrate cells and in sufficiently high concentrations inhibit certain enzymes, but no evidence of enzymal inhibition has been found in persons drinking fluoridated water containing concentrations of fluoride optimal for dental health.

9. Most of the fluoride absorbed into the system is rapidly excreted, principally in the urine; the rest is deposited in the minerals of the bones and teeth.

10. When large doses or excessive amounts of fluorides are ingested for many years, the skeletal system exhibits structural changes. Adequate factors of safety guarantee the absence of these changes when water containing 1 ppm fluoride is consumed.

11. Toxic doses of fluorides (50 times that used in controlled water fluoridation) injure the kidneys. There is no evidence of kidney injury or of any effect on concurrent kidney disease in the populations drinking water where fluoride concentrations range up to 5 ppm.

12. No relation between thyroid dysfunction and naturally fluoridated water has been established.

13. Growth and development, somatic and psychic, are normal in children drinking water containing 1 ppm fluoride.

14. The formation of teeth, their resistance to caries and their appearance are improved when water containing optimal concentrations of fluoride is consumed.

15. Over 3,000,000 people in the United States, over half a million in England, and large population groups in other countries have, during their lifetime, consumed water containing 1 ppm fluoride or more. Mortality and morbidity rates for five leading causes of death are comparable for cities in the United States with fluoride and nonfluoride public water supplies. No relation between fluoride and arthritic changes in bone has been found, nor have confirmed instances of allergy to water containing 1 ppm fluoride been described.

16. The addition of fluorides to public water supplies has proved to be similar to other routine mechanical procedures employed in waterworks practice.

17. No other vehicles or technics for the prophylactic application of fluorides can at present replace the fluoridation of drinking water as a public health measure. Where water fluoridation cannot be used, research into other vehicles and improved methods of local fluoride application should be encouraged.

World Health Organization, Palais des Nations, Geneva, Switzerland

Statistical studies on caries frequency in school children of two Swedish communities

Olof Gerdin. *Svensk tandläkar.Tskr.* 51:7-17 Jan. 15, 1958

Studies to determine the frequency of dental caries in the deciduous and permanent dentition of pupils of two public schools in two neighboring Swedish communities have been carried out over almost eight years. The children examined were between 7 and 12 years old and resided either in the rural town of Mellerud or the urban village of Järns.

In 1940, when the investigation was initiated, no caries-preventive procedure had been undertaken. Later, however, parents and children had been advised to follow a strict diet regulation providing a nutrition low in sugar but rich in vitamins. Oral hygiene, previously neglected, was practiced more frequently.

The material consisted of 2,071 dental records of the children of Mellerud and 292 dental records of the children of Järns. The data were ob-

tained during the periodic (annual) dental examinations. The generally accepted indexes, DMF and def, were used.

Comparison of the data obtained produced the following findings:

1. The caries frequency in Mellerud (from 32.4 to 44.4) was higher than that in Järns (from 16.7 to 18.9).

2. The diet of the Mellerud children contained a higher amount of saccharides than that of the Järns children.

3. Far more sweets were eaten between meals in Mellerud than in Järns.

4. Oral hygiene was practiced more frequently in Mellerud than in Järns.

5. The drinking water in Mellerud contains from 10 to 16 ppm calcium and about 0.1 ppm fluoride; that in Järns from 19 to 35 ppm calcium and from 0.5 to 1.7 ppm fluoride.

6. An almost equal amount of iron (about 0.1 ppm) is present in the drinking water of both communities.

There was no statistically significant difference in regard to caries distribution between the age and sex groups in both communities or in specific tooth types, symmetrical and unsymmetrical development of carious lesions or predisposition to caries and periodontal disease.

Similar investigations of the caries frequency in preschool and school children of other Swedish communities and districts may provide adequate guides for the standardization of caries-preventive procedures to be initiated.

Folktandvården, Alingsås, Sweden

The mystery of caries immunity

Gordon E. Green. *Science Digest* 44:50 Sept. 1958

Scientists may soon solve the problem of the built-in protection some persons have against dental caries.

From the saliva of a group of people who were free of carious lesions—no matter how much they neglected oral hygiene—dental researchers of the Ohio State University College of Dentistry have isolated a chemical substance that is thought to combat effectively caries-causing bacteria.

Although the chemical has not been identified nor has its chemical structure been published, serial experiments have proved that when brought into direct contact with lactobacilli, the acid- producing anaerobic or microaerophilic bacteria, it quickly destroys these microorganisms and prevents further propagation.

It can be assumed that only one person in 100 can be termed "caries immune." It was established that these caries-immune persons have comparatively few lactobacilli in their saliva.

About 15 gallons of saliva from 60 caries-immune persons have been collected in order to investigate the possible source of caries immunity.

It is hoped that the investigation will soon reveal whether the inborn immunity factor is transferable from caries-immune or caries-resistant persons to caries-susceptible patients or whether it will be possible to develop a synthetic substance which has the property of duplicating the action and function of the caries-immunity factor.

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Status of controlled fluoridation in the United States, 1945–57

Pub.Health Rep. 73:634-636 July 1958

Of the approximately 118 million people in the United States provided water by community water supplies in 1957, 40.3 million (or about one in every three persons) in 3,534 communities drank water containing the minimum or higher level of fluoride recommended for optimum dental benefits. Of these 40.3 million persons, 33.3 million in 1,631 communities are supplied water in which the fluoride level is controlled, and 7 million persons in 1,903 places use water naturally containing 0.7 ppm or more fluoride. Since 1950, the number of persons using water with a controlled fluoride content has increased by about 32 million.

Fluoridated water is provided for a greater proportion of people living in large cities than in smaller communities. Two of the five cities with populations exceeding 1 million and 9 of the 13 cities with populations ranging between a half million and 1 million have instituted fluoridation.

Of places with less than a half million population, 32 per cent of those with a population between 10,000 and 500,000, 17 per cent between 2,500 and 10,000, and 5 per cent under 2,500 have fluoridation programs.

In 82 per cent of the cities fluoridating their water, the governing body of the community authorized adoption of the measure. In 5 per cent, authority to fluoridate was obtained by referendums, and in 4 per cent the utilities commission authorized the measure.

During the years 1945 to 1957, 94 communities discontinued fluoridation; of these, 13 reinstituted the measure.

The major increases in the population provided with fluoridated water during the next few years are likely to be in the larger cities. However, in the more distant future the greatest increase probably will be in the smaller places where today only 5 per cent have fluoridation programs.

Controlled fluoridation programs are in operation in one or more communities in the following countries: Australia, Brazil, Canada, Chile, Colombia, Costa Rica, Egypt, England, Germany, Guatemala, Japan, The Netherlands, New Zealand, Panama, Panama Canal Zone, Peru, the Philippines, Scotland and Sweden.

Division of Dental Public Health, Public Health Service, Washington 25, D.C.

Interrelation between fluoride contents of drinking water and of tooth structures

Z. Geschwind, D. Koninska and B. Massalska. *Czas.stomat.* 11:95-105 Feb. 1958

The public health authorities of Poland, on the basis of a proposal of the Polish Dental Association, consider the initiation of fluoridation as a caries-preventive procedure for the near future. It seems important to present statistical data on the caries incidence in communities with drinking water naturally rich in fluoride, and to compare the results with data on the caries incidence in communities with drinking water poor in fluoride.

Serial examinations of the tooth conditions of preschool and school children of Kwidzyn (0.8 ppm fluoride) and of Malbork (3.2 ppm. fluoride) proved that the caries frequency in these two communities is far lower (respectively, one-half and one-fourth) than in Gdansk (0.2 ppm).

The distribution of fluoride in the enamel and dentin of 52 healthy and 53 carious teeth was investigated. The fluoride concentration in healthy teeth (1,640 ppm in enamel and 4,028 in dentin) was much higher than in carious teeth (199 ppm in enamel and 934 ppm in dentin).

The estimation of the fluoride concentration was based on the result of the modified Willard and Winter's test methods as well as on colorimetric measurements (Sanchis and Scott's method).

To ascertain whether a relationship exists between the fluoride concentration in drinking water and the fluoride content of tooth structures in regard to increase or decrease in caries frequency, further statistical analyses were carried out at the Dental College of the University of Gdansk.

The following conclusions were reached:

1. The fluoride concentration in enamel and dentin of healthy teeth is far greater than in the structures of carious teeth.

2. The amount of fluoride in the teeth of children consuming drinking water with a minimal fluoride content (Gdansk = 0.2 ppm) is lower than the amount of fluoride in the teeth of children consuming drinking water naturally rich in fluoride (Kwidzyn = 0.8 ppm and Malbork = 3.2 ppm).

3. No significant difference was observed between the fluoride distribution in the tooth structures of children of Kwidzyn (0.8 ppm) and of Malbork (3.2 ppm).

4. The established relationship between the fluoride content of drinking water regularly consumed and the fluoride content of tooth structures may explain to a certain degree the phenomenon of the decrease in caries incidence in communities using drinking water containing the optimal or even excessive amount of fluoride. The extremely low incidence of caries in Kwidzyn and Malbork cannot be caused by dietary differences (the diet in Gdansk seems even less conducive to caries) but rather by a chemomorphosis due to fluoride content within tooth structures.

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General

The "Adjutor" dental unit: a contribution to modern dental practice and operating efficiency

Karlheinz Kimmel. *Deut.Zahnärztebl.* 12:273-275 April 22, 1958

During the last decade, the dental industry has made substantial progress in its program of producing more efficient, modern dental equipment, especially by introducing up-to-date master units.

Excellent cooperation between members of the dental faculties of the German universities and dental practitioners with industrial designers has helped to solve many technical and styling problems.

One of the most outstanding contributions to modernization of the dental office equipment is the "Adjutor," a dental master unit, produced and recently introduced by the Siemens-Reininger Works, Erlangen, Germany.

This master unit consists of several streamlined cabinets which contain almost everything needed in dental practice including a movable operation table, desks for the dentist and his assistant, a complete x-ray equipment, a place for laboratory work and an examination desk. The final design is based on the suggestions of Professor G. Korkhaus, director of the Dental College of the University of Bonn and president of the Commission on Scientific Assembly of the Fédération Dentaire Internationale.

The compartments and shelves for instruments, drugs and dental materials are positioned within easy reach of the dentist. The compartments in the central section of the unit contain sterilized items for surgical and endodontic procedures. All compartments can be opened from both sides.

The air spray equipment, the electrical appliances such as pulp tester, mouth lamp, cautery, x-ray illuminator with film clip, rotation compressor, switches and all controls are situated on the right side of the dentist. The shelves containing surgical appliances and the laboratory working table equipped with water and wax heaters and accessory appliances for prosthodontic and orthodontic procedures are on his left side.

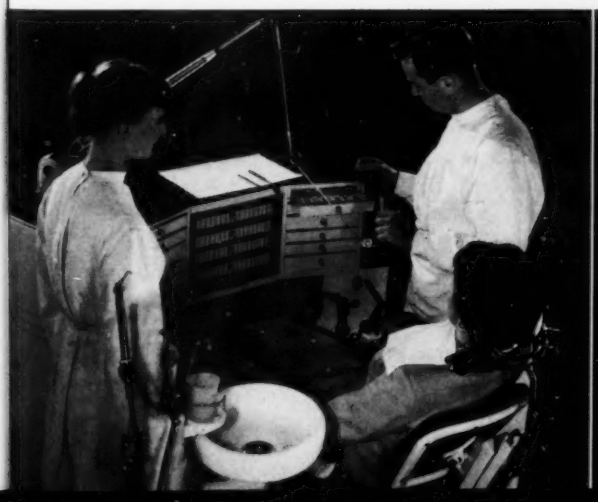
The dental engine (from 550 to 25,000 rpm), triple section arm and belt, and handpieces are fitted for alternating and direct currents and run silently. The master unit is supplied with cables connecting it with the motor-driven chair.

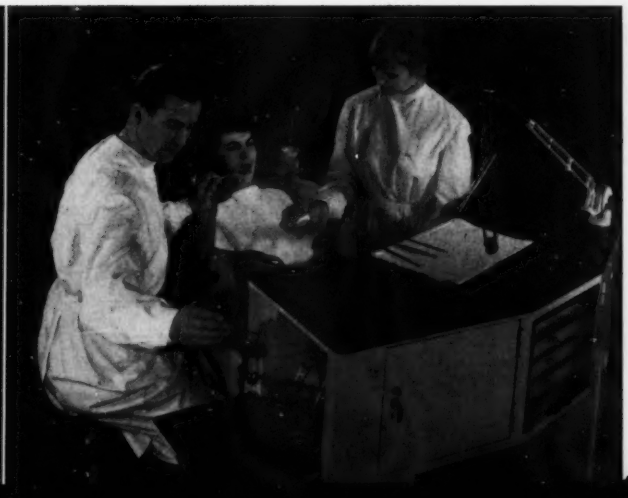
The Adjutor unit increases the possibilities of working in a sitting position, and eliminates all chairside stresses and fatigue.

The efficiency of dentists and dental assistants is increased by making all items easily adjustable to reach.

The Adjutor master unit has been tested at several German dental colleges and clinics, and after comparison with other recently introduced dental units, it has been highly recommended for use in dental clinics and private offices.

Markenbildchenweg 16, Koblenz, Germany





Dental materials in the tropics

Howard K. Worner and Alan R. Docking. *Austral. D.J.* 3:215-229 Aug. 1958

This paper is based on investigations made during and subsequent to a visit by Worner to New Guinea and Bougainville toward the end of World War II. The principal object of the field work was to investigate the nature, extent and possible methods for the prevention of tropical deterioration of army dental stores. The quantitative research work was continued subsequently at the Dental School of the University of Melbourne, the tropical atmospheric conditions being artificially produced.

Certain classes of dental materials are prone to deteriorate fairly rapidly if exposed to the atmosphere in the humid tropics. These include cements (particularly because of changes in the liquid component), gypsum products such as plasters, artificial stones and plaster-bonded investments (caused by the reaction of calcium sulfate hemihydrate with moist air), certain impression materials, anesthetics and instruments not constructed of stainless steel.

Tropical conditions affect technics. The most obvious factor is the temperature of the mixing slab which normally should be chilled for best work.

The various types of dental waxes appear to withstand tropical storage fairly well, but modeling wax sheets are liable to stick together if not suitably packed. The chief difficulty with waxes in hot climates lies in technic rather than storage, for high temperatures are conducive to distortion of patterns and models unless the proper precautions are taken. In an Australian standard now being prepared, it is proposed to include two types of modeling wax—one for general use and the other for warm or hot climates.

Tropical conditions do not appear to affect adversely either silver-tin alloy fillings or mercury; provided that products complying with the relevant Australian or American standards are used, no trouble should be experienced. Mulling the amalgam in the palm of the hand is contraindicated in any climate, but its effects will be accentuated in the tropics.

The stability of epinephrine is a more serious problem at higher temperatures, but the difference is only one of degree. A rapid turnover in stock, or refrigerated storage, is desirable to ensure unaffected solutions. In regard to cartridges of anesthetic solutions, these may be subjected to a tendency to "breathe" on transport through the tropics, with the result that in imported products the volume of air in the cartridge often exceeds the 0.03 cc. allowed by the United States and the draft Australian specifications.

No deterioration of acrylic resins on storage was observed in the tropics, but there was a loss of monomer from some bottles. The monomeric liquid must be stabilized and kept in the coldest place available, out of the light. Double sealing of all volatile liquids is advised. Higher temperatures result in more rapid action between the powder and liquid, and in hot climates it is essential that the operator pack the dough as soon as it reaches the correct stage.

Various dental products will tend to share with other materials of like nature the ravages of warm, humid atmospheres and of the pests that abound under such conditions. Some illustrated examples include the growth of molds on textiles, the corrosion of metal instruments and equipments (burs are particularly susceptible), and damage by rodents. Labels need suitable adhesives and protection against cockroaches and other insects by varnishing or other means.

Commonwealth Bureau of Dental Standards, University Grounds, Carlton N.3, Victoria, Australia

Skin degerming agents with special reference to a new cationic iodophore

Arthur W. Frisch, Gordon H. Davies and William Krippaehne. *Surg.Gynec.& Obst.* 107:442-446 Oct. 1958

The skin degerming properties of a number of disinfectants were determined on the hands by means of the "scrub" index technic (Blank and others, 1950).

The iodophoric germicide, Virac, consists of the quaternary (N-methylheptylcolaminoformylmethyl-pyridinium chloride) 5.2 per cent coupled with 0.2 per cent iodine. It is stated to have the following properties which distinguish it from ordinary aqueous or alcoholic iodine solutions:

(1) stains the skin slightly and temporarily; (2) reduces the vapor pressure of iodine; (3) releases iodine on demand but maintains it in the water soluble state, and (4) acts powerfully as surface agent and shows deodorant and analgesic properties.

The scrub index for soap and water was determined to be 173, which is taken as a standard for comparison with other germicides. A low index connotes good degerming properties. The following other indexes were obtained: a 2 per cent hexachlorophene soap (Septisol), 151; benzalkonium chloride (Zephiran), 96; a lotion with 3 per cent hexachlorophene (pHisohex), 94; N-methylheptylcolaminoformylmethyl-pyridinium chloride, 58; Virac, 19, and ethyl alcohol (70 per cent by weight), 1.7.

University of Oregon Medical School, Portland, Ore.

Principles of medical writing

Raymond Whitehead. *A.M.A. Arch.Surg.* 75:1-8 July 1957

There are four roads to self-improvement in writing: (1) study of works on the subject, including the instructions provided by many periodicals; (2) study of examples relevant to one's particular problem; (3) criticism of one's manuscripts by colleagues, and (4) comparison of manuscript with proof, which reveals the professional skill of an editor.

Brevity is one of the greatest virtues in a medical writer. It means writing only what is essential to make one's point. It is achieved by: (1) writing short articles; (2) avoiding repetition; (3) writing short sentences without strings of subordinate clauses, and (4) using the shortest suitable words.

Clarity is attained by using marks of punctuation in accordance with the sense, avoiding ambiguous words and phrases, avoiding disruption of the text by bulky data, condensing data by using tables, and omitting all nonessential details.

The monotony of unbroken print can be relieved by providing headings, illustrations, and small type for reviews at the start of a paper, methods, protocols and case histories.

Anyone who writes much cannot hope to avoid making mistakes. A reader who discovers these should not write a paper solemnly exposing them; he should write to the author, who usually will be grateful if his correspondent will correct them in his next paper. When there is disagreement on an important scientific question, the parties should meet for discussion and so minimize or avoid public controversy; if public disagreement is unavoidable, it should be pursued with civility. Lastly, a word of praise never comes amiss. Advanced research is a lonely affair. Only a few workers can fully appreciate a specialized paper. Nothing is more welcome to an author than a kindly note from another worker.

In preparing a bibliography, the medical librarian is the writer's best friend and should always be visited if possible.

Illustrations are a form of language that all can understand, and they save much verbal description. Text and illustration should be coordinated—the descriptive part of a text can be largely a commentary on pictures.

The structure of scientific articles is well understood, but essays and their titles are apt to be too metaphorical, creating difficulties for indexers. Book reviews and summaries of articles could be more informative. Biopsy and roentgenographic reports should be brief but should make clear what action is indicated.

Skill in expression and in preparing manuscripts are the marks of the craftsman, but more is needed to make a good writer. Quality springs from a sound knowledge of bibliography and an appreciation of medical illustration and of statistics. Broader vision and sympathy result from the ability to read foreign languages.

University of Manchester, England

Preventive dentistry

Philip E. Blackerby. *New York J.Den.* 28:258-259 Aug.-Sept. 1958

Preventive dentistry is based on a philosophy of dentistry. It involves the prevention of dental diseases, dystrophies, dysfunctions and disorders, and the application of all measures effective in preventing, intercepting or controlling the advance of existing dental abnormalities, and of

averting their effects or sequelae. Preventive dentistry seeks to promote optimum oral and general health, and by these means and through education to assist the patient to achieve maximum efficiency.

Preventive dentistry should be taught as a philosophy, in all phases of the dental curriculum. The student should be influenced to think of various dental treatment procedures and technics in terms of their preventive, rather than their reparative, significance. He should develop a concept of positive health, a concern for total mouth health, and an interest in the patient as a whole, instead of placing emphasis on technics and on individual, unrelated restorative procedures.

W. K. Kellogg Foundation, Battle Creek, Mich.

Geriatrics in reverse

Jules B. Seldin. *New York J.Den.*
28:295 Oct. 1958

It always has been the concern of the medical and dental professions to develop a system of efficient care for the aged. But little has been done to make the lot of the aging, indigent dentist more bearable.

Organized dentistry has discussed the need to provide an emergency dental service to the public during vacation periods and over the weekends when dentists are not available in their offices. One suggestion involves hospital outpatient clinics; another involves panels of volunteer dentists who would be in their offices on specified days for dental emergencies. But hospital staffs have not been enthusiastic and there has been no rush of applicants for such panels.

The dentist who has reached the age of 65 years and who would like to make a few extra dollars but not to exceed the O.A.S.I. limitation on earnings might be happy to participate in a program of emergency dental service if it were organized properly. The moderate compensation would be welcomed by the dentist. The dental profession would be promoting a service for the public and would be caring for its own indigent members who would welcome this form of dignified help.

8 West 40th Street, New York, N. Y.

Dermatological hazards from epoxy resins

George E. Morris. *Clin.Med.*
5:1219-1222 Sept. 1958

Epoxy resins, now being used as a denture base material and for other prosthetic purposes and laminates, and in surface coatings, adhesives, molding compounds, and so forth, may cause dermatitis, conjunctivitis and rhinitis in those who handle these synthetic resins. An official of the U. S. Public Health Service recently stated that there is hardly a plant he has visited, in which these resins are used, where dermatoses have not been caused thereby.

In their processing stages, particularly in the liquid state, epoxy resins represent strong skin sensitizers and skin irritants, as do the liquid amines which usually are employed as curing agents or hardeners. Solvents and reactive diluents are among other chemicals used in processing. Some solvents currently employed for dilution purposes are toluene, xylene, acetone and methylethylketone. Workers use solvents to remove the epoxy compounds from their skin. Such application of solvents directly to the skin represents one of the leading causes of industrial dermatitis.

Reactive diluents commonly added to epoxy resins to reduce viscosity are styrene oxide, allyl glycidyl ether, phenyl glycidyl ether and acetonitrile. Both the solvents and the reactive diluents are skin sensitizers and irritants. Workers engaged in processing epoxy resins and mixing in these additives are prone to develop an erythematous eczematous dermatitis on the central third of the face as well as on the hands and forearms. Two case reports illustrate this hazard.

Workers and management should be informed as to the hazards involved in processing epoxy resins. Management should provide appropriate working areas, cleaning facilities and protective clothing. Persons who have had prior sensitization dermatitis should not be allowed to work with epoxy resins.

The chemical industry is engaged in developing low-toxicity hardeners which may serve to reduce the incidence of skin eruptions from epoxy resins.

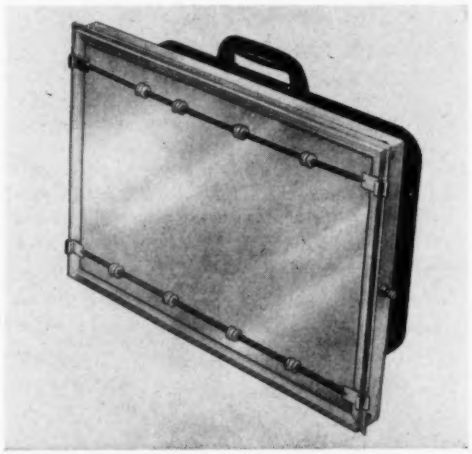
520 Commonwealth Avenue, Boston 15, Mass.

New equipment

The information reported here is obtained from manufacturers. Dental Abstracts *does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.*

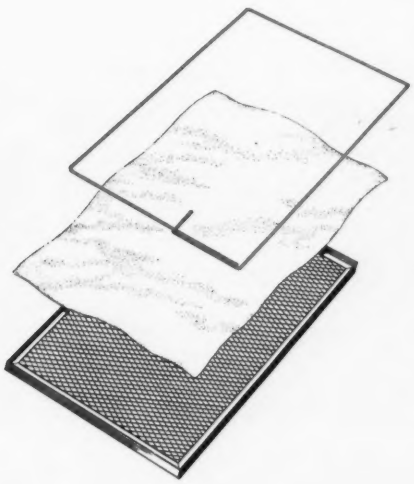
The "Ful-Vu Mount" is designed for mounting and filing x-ray films. Style A is made of plastic. Style B is made of a combination of paper and plastic. Use of either mount is said to save time. The style A mount (illustrated) has a separate pocket for each film. It has a slot for replaceable name cards. The style B mount, no thicker than film, has a silicone treated window which separates easily from the adhesive back. The plastic back protects films from scratches. *Coe Laboratories, Inc., 6033 Wentworth Avenue, Chicago 21, Ill.*

The "Tri-Lite Viewer" has a three-stage switch to provide three levels of lighting for light, medium and dark dental roentgenography. The retention device, large enough for extraoral roentgenograms, secures film and film mounts under soft rubber rollers attached to a lateral tension spring. The spring may be raised or lowered to locate the film in any vertical position on the viewing surface. Three masking plates eliminate unwanted light. *Rinn Corp., 2929 North Crawford Avenue, Chicago 41, Ill.*

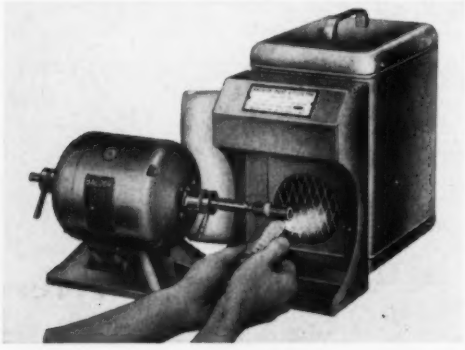


New "electro-stabilized" GE 90-II and GE 70-II dental x-ray units are announced. Test exposures are unnecessary to check performance; this factor reduces tube wear and helps to eliminate unwanted radiation. An improved electronic timer offers positive indexing and automatic reset, and provides equal density changes with 14 positions calibrated in fractions of a second. A time delay of ½ second insures full x-ray output for each exposure. *X-Ray Department, General Electric Co., 4855 West Electric Ave., Milwaukee 1, Wis.*

The "Elektra" snap-in filter will give maximum air filtration at a cost of about six cents per month per unit. The filter consists of a flexible frame with a metal grid and a snap ring to hold the disposable filter pads in place. Filter pads are made of inert fluff acetate. Filters are available in sizes to fit all heating and air conditioning systems. *Extraer Inc., 1210 Chenevert, Houston, Texas.*



A portable "Baldor" D5 dust collector utilizes a ¼ horsepower motor and a large blower to provide suction that draws even the heaviest particles into the bag or tray. Designed for use by dentists, laboratories and jewelers, the unit collects enough precious metal particles to pay for itself in a short time. It is small, compact and fits any standard workbench. It can be used with any make of bench lathe. *Baldor Electric Co., 4353 Duncan Ave., St. Louis 10, Mo.*



A new "Startech" camera with pinpoint vision is designed for use by the dentist who wants a quickly-made record of a patient's face, oral cavity or other dental subject. A modification of the "Brownie Starflash" camera, the Startech utilizes the light of tiny flash bulbs to provide a crisp, close-up view of the subject at working distances ranging from 4 to 16 inches. A single adjustment to set the diaphragm is all that is needed before the photographer snaps the pictures. The camera uses conventional M-2 flash lamps and 127 size films to produce color or black-and-white prints and enlargements or color slides. *Medical Division, Eastman Kodak Co., Rochester, N.Y.*

The no. 699 carbide bur has a smaller size and increased taper which fit it for high-speed operation. The small, razor-sharp edges cut to the tip. A parallel slot eliminates "pop-out" and "side-slip." *Chas. W. Rode Associates, 3343 North Eastern Avenue, Los Angeles 32, Calif.*

A simplified technic for making efficient space maintainers in less than 20 minutes is pictorially described in a booklet. The booklet is part of a kit of standardized, prefabricated materials and instruments. The technic utilizes a simple method of contouring and adapting molar bands in the mouth and of soldering preformed maintainer wires. *Williams Gold Refining Co., Inc., 2978 Main St., Buffalo 14, N.Y.*

"Vim" disposable plastic syringes are available with or without needles. Each syringe has a flat plunger end, readable markings, a transparent Luer tip and a long barrel. The syringe works perfectly with regular needles. Each unit is individually packaged and sterilized by ethylene oxide, ready for use. *Surgical Products Division, American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N.Y.*

Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Comparative and experimental examinations of the reactions of the masseter muscles to the insertion of an Andresen-Häupl apparatus in various bite conditions (Vergleichende und experimentelle Untersuchungen über die Reaktionen der Masseteren bei eingesetztem Andresen-Häupl Apparat mit verschiedenen Einbissarten). *Hans Kaltenbacher. 1957.* DR.MED.DENT. *University of Freiburg/Breisgau, Germany.*

Representation of the periodontal nutritional canals in roentgenograms (Die Darstellung der paradentalen Ernährungskanäle in Roentgenbildern). *J. Neumann. 1957.* DR.MED.DENT. *West German Dental Clinic, Medical Academy of Düsseldorf, Germany.*

Preparation of the floor of the cavity in caries of the fourth degree (Über die Behandlung des Kavitätenbodens bei Caries profunda). *R.Bitterli. 1957.* DR.MED.DENT. *West German Dental Clinic. Medical Academy of Düsseldorf, Germany.*

Hydroxylapatite in the exchange of fluorine and hydroxyl ions (Der Hydroxylapatit im Austausch von Fluor- und Hydroxylionen). *Karl Ludwig Vogelsang. 1957.* DR.MED.DENT. *University of Tübingen, Germany.*

Advantages and disadvantages of Veau and Axhausen's method in cleft palate surgery (Vor- und Nachteile der Gaumenspaltenoperation nach Veau und Axhausen). *Ewald Eisinger. 1957.* DR. MED.DENT. *University of Tübingen, Germany.*

Results of a serial examination of kindergarten pupils in Halle to establish the incidence of anomalies in the deciduous dentition and of caries (Ergebnisse einer Reihenuntersuchung der Hallenschen Kindergärten unter besonderer Berücksichtigung der Anomalien des Milchgebisses und des Kariesbefalls dieser Kinder). *Ingeborg Simon. 1957.* DR.MED.DENT. *University of Halle/Saale, Germany.*

Recent experience in the disinfection of hands in dental practice (Neuere Erkenntnisse über die Händedesinfektion in der zahnärztlichen Praxis). *Martin Krecker. 1957.* DR.MED.DENT. *University of Mainz, Germany.*

Investigations of the utility of "Caviplast" for cavity preparations in caries of the fourth degree (Untersuchungen über die Brachbarkeit des "Caviplast" in der Behandlung von Kavitäten bei profunder Karies). *Max Mebes. 1957.* DR.MED. DENT. *University of Tübingen, Germany.*

Studies of the solubility of tooth cementum (Untersuchungen über die Löslichkeit von Zahnzementen). *Egbert Pietsch. 1957.* DR.MED.DENT. *University of Mainz, Germany.*

Incidence of dental caries in permanent teeth established by an examination of 10,058 school children from 6 to 14 years old (Über die Kariesfrequenz an bleibenden Zähnen auf Grund einer Untersuchung an 10.058 Schulkindern von 6 bis 14 Jahren). *Gertrud Sievers. 1957.* DR.MED.DENT. *University of Kiel-Wik, Germany.*

Experimental examinations of the potency of various local anesthetics (Experimentelle Untersuchungen über die Wirkungstiefe einiger Lokalanästhetica). *Dag Sörlie. 1957.* DR.MED.DENT. *University of Kiel-Wik, Germany.*

Vasoconstricting effect of several local anesthetics on gingival vessels: examined under the Zeiss-Stereo microscope (Über die vasokonstriktorische Wirkung verschiedener Lokalanästhetica auf die Gefässe der Gingiva: untersucht mit den Zeiss-Stereo-Mikroskop). *Eugen Buhl. 1957.* DR.MED. DENT. *University of Kiel-Wik, Germany.*

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